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To
William, H. Pitkin
a present from his
Uncle Thomas H. Hubbard
~~~~~

To

Bela Hubbard.

from his affectionate  
cousin

William H. Pitkin





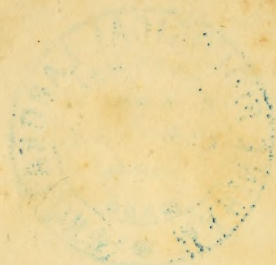




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ANECDOTES  
OF  
REMARKABLE INSECTS.

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THEODORE

STONIS VI WILKINSON

*Bela Hubbard*

ANECDOTES

OF

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REMARKABLE INSECTS;

SELECTED FROM

NATURAL HISTORY,

AND

INTERSPERSED WITH POETRY.

Illustrated with Cuts.

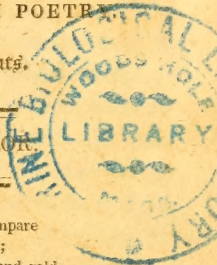
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By JOSEPH TAYLOR.

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The little Gnat, in beauties, may compare  
With all his rival brothers of the air;  
Transparent feathers, purple, green, and gold,  
His wings, small feet, and fringed tail enfold.  
Four sharpen'd spears his head with weapons arm,  
And his pearly eyes, with liveliest graces charm.

*Moses Browne.*

~~~~~  
Go to the Ant, thou sluggard: consider her ways, and be wise;
Which having no guide, overseer, or ruler,—Provideth her meat in
the summer, and gathereth her food in the harvest.

Proverbs, chap. vi. ver. 6, 7, 8.

—◆—
London:

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1817.

ALPHABET

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PRELIMINARY
OBSERVATIONS,

BY DIFFERENT AUTHORS.

PERHAPS we have been accustomed to look upon Insects as so many rude scraps of Creation; but if we examine them with attention, they will appear some of the most polished pieces of divine workmanship. Many of them are decked with the richest finery. Their eyes are an assemblage of microscopes: the common Fly, for instance, who, surrounded with enemies, has neither strength to resist, nor a place of retreat to secure herself. For this reason she has need to be very vigilant, and always upon her guard. But her head is so fixed that it cannot turn to see what passes, either behind, or around her. Providence therefore has given her, not barely a retina, but more than a legion of eyes: insomuch that a single fly is supposed to be mistress of no less than

eight thousand. By the help of this truly amazing apparatus, she sees on every side, with the utmost ease and speed, though without any motion of the eye, or flexion of the neck.

The dress of insects is a vesture of resplendent colours, set with an arrangement of the brightest gems. Their wings are the finest expansion imaginable, compared to which lawn is as coarse as sack-cloth. The cases which inclose their wings, glitter with the finest varnish, are scooped into ornamental flutings, are studded with radiant spots, or pinked with elegant holes. Not one but is endued with weapons to seize their prey, and dexterity to escape their foe; to dispatch the business of their station, and enjoy the pleasure of their condition.

What if the Elephant is distinguished by his huge proboscis? The use of this is answered in these his meanest relations, by their curious feelers, remarkable, if not for their enormous size, yet for their ready flexion and quick sensibility. By these they explore their way in the darkest road: by these they discover and avoid whatever might

defile their neat apparel, or endanger their tender lives.

Every one admires the majestic Horse. With how rapid career does he bound along the plain ! Yet the Grasshopper springs forward with a bound abundantly more impetuous. The Ant too, in proportion to his size, excels him both in swiftness and strength, and will climb precipices which the most courageous courser dares not attempt to scale. If the Snail moves more slowly, she has however no need to go the same way twice over ; because, whenever she departs, wherever she roams, she is always at home.

Even the Spider, though abhorred by man, is the care of all-sustaining heaven. She is to support herself by trepanning the wandering fly. Suitable to her employ, she has bags of glutinous moisture. From this she spins a clammy thread, and weaves it into a tenacious net. This she spreads in the most opportune place. But knowing her appearance would deter him from approaching, she then retires out of sight. Yet she constantly keeps within distance ; so as to

receive immediate intelligence when any thing falls into her toils, ready to spring out in the very instant. And it is observable, when winter chills the air, and no more insects rove through it, knowing her labour would be in vain, she leaves her stand, and discontinues her work.

I must not forget the inhabitants of the hive. The Bees subsist as a regular community. And their indulgent Creator has given them all implements necessary, either for building their combs, or composing their honey. They have each a portable vessel, in which they bring home their collected sweets : and they have the most commodious store-houses, wherein they deposit them. They readily distinguish every plant which affords materials for their business, and are complete practitioners in the arts of separation and refinement. They are aware that the vernal bloom and summer sun continue but for a season. Therefore they improve to the utmost every shining hour, and lay up a stock sufficient to supply the whole state, till the flowing harvest returns.—HERVEY.

On the same Subject :

BY ANOTHER AUTHOR.

AMONG the numerous tribes of Insects, the commonwealth of the Bee is admirable. Indeed the variety, dispositions, sagacity, and policy of Insects in general, is wonderful : and the remarkable proportions of their organs, and delicacy of structure, ought to excite inquisitive curiosity, rather than a propensity of enmity or destruction. They are arrayed with a profusion of gold, silver, and diamonds ; of colour, azure, green, crimson, &c. The most curious fringe and plumage adorns their wings, heads, and bodies. They are provided with teeth, saws, darts, claws, and scaly coats of mail. Some spin on distaffs, and with fingers form the thread. Others, construct nests, and weave lawn, for which they are provided with shuttles or clues. Some cut asunder timber, and build in wood. Others make wax, and are furnished with rakes, ladles, and trowels. Many of them have trunks, more wonderful for their various uses than the elephant's, which to

some serves for an alembic, producing a distilled syrup which man may imitate, but in vain attempt to equal: to others, it performs the office of a tongue: to some, an instrument for piercing; and to most, as a reed for suction.

On the Beauty of Insects:

BY MRS. BARBAULD.

OBSERVE the insect race, ordain'd to keep
The lazy sabbath of a half year's sleep.
Entomb'd beneath the filmy web they lie,
And wait the influence of a kinder sky.
When vernal sun-beams pierce their dark retreat,
The heaving tomb distends with vital heat:
The full-form'd brood, impatient of their cell,
Start from their trance and burst their silken shell.
Trembling awhile they stand, and scarcely dare
To launch at once upon the untried air.
At length assur'd they catch the fav'ring gale
And leave their sordid spoils, and high in æther sail.

Lo the bright train their radiant wings unfold,
With silver fringed, and freckled o'er with gold.

On the gay bosom of some fragrant flower
They idly flutt'ring live their little hour,
Their life all pleasure, and their task all play,
All spring their age, and sun-shine all their day.
Not so the child of sorrow, wretched man :
His course with toil concludes, with pain began,
That his high destiny he might discern,
And in misfortune's school this lesson learn,—
Pleasure's the portion of th' inferior kind ;
But glory, virtue, Heaven for man design'd.

What atom forms of insect life appear !
And who can follow Nature's pencil here ?
Their wings with azure, green, and purple gloss'd,
Studded with colour'd eyes, with gems emboss'd,
Inlaid with pearl, and mark'd with various stains
Of lively crimson through their dusky veins.
Some shoot like living stars athwart the night,
And scatter from their wings a vivid light,
To guide the Indian to his tawny loves,
As through the woods with cautious step he moves.
See the proud giant of the Beetle race,
What shining arms his polish'd limbs enchase !
Like some stern warrior formidably bright
His steely sides reflect a gleaming light ;
On his large forehead spreading horns he wears,
And high in air the branching antlers bears .
O'er many an inch extends his wide domain,
And his rich treasury swells with hoarded grain."

On the same subject :

BY *MRS. ROBINSON.*

Poor insect ! what a little day
Of sunny bliss is thine !
And yet thou spread'st thy light wings gay,
And bid'st them, spreading, shine.

Thou humm'st thy short and busy tune,
Unmindful of the blast ;
And careless, while 'tis burning noon,
How quick that noon be past.

A show'r would lay thy beauty low,
A dew of twilight be
The torrent of thy overthrow,
Thy storm of destiny !

Then spread thy little shining wing,
Hum on thy busy lay !
For *Man*, like *thee*, has but his spring ;
Like *thine*, it fades away.

*On Cruelty to Insects :**BY WILLIAM COWPER, ESQ.*

I would not enter on my list of friends
(Tho' graced with polished manners and fine sense,
Yet wanting sensibility) the man,
Who needlessly sets foot upon a worm.
An inadvertent step may crush the snail,
That crawls at evening in the public path ;
But he that has humanity, forewarned,
Will tread aside, and let the reptile live.
The creeping vermin, loathsome to the sight,
And charged perhaps with venom, that intrudes,
A visitor unwelcome, into scenes
Sacred to neatness and repose, the alcove,
The chamber, or refectory, may die :
A necessary act incurs no blame.
Not so when, held within their proper bounds,
And guiltless of offence, they range the air,
Or take their pastime in the spacious field :
There they are privileged ; and he that hunts
Or harms them there is guilty of a wrong,
Disturbs the economy of Nature's realm,
Who, when she formed, designed them an abode.
The sum is this. If man's convenience, health,

10 PRELIMINARY OBSERVATIONS.

Or safety interfere, his rights and claims
Are paramount, and must extinguish them.
Else they are all—the meanest things that are,
As free to live, and to enjoy that life,
As God was free to form them at the first,
Who in his sovereign wisdom made them all.
Ye therefore, who love mercy, teach your sons
To love it too.

ANECDOTES OF
REMARKABLE INSECTS.

ANTS.—*TERMES*.

[The WOOD ANT, as seen through a Microscope.]



*Brief description of their Commonwealth,
&c.*

ANTS live in large societies, somewhat in the manner of bees or wasps, and are, like them, divided into males, females, and neutrals. This latter class appears to conduct the business of the nest, which is usually at a small distance from the surface, in some

slight elevation, either prepared by the insects themselves, or previously formed by some other animals, as moles, &c. They feed on both animal and vegetable substances, devouring the smallest kinds of insects, caterpillars, &c. as well as fruits of different kinds. The fondness of Ants for animal food is often turned to good account by anatomists. When they wish to obtain the skeleton of any animal, too small or delicate to admit of being prepared in the usual way, the animal is disposed in a proper position, in a small box, with perforations in the lid, and deposited in a large Ant-hill; in consequence the softer parts are eaten away, and the skeleton remains. Thus, very elegant skeletons of frogs, snakes, &c. may be obtained.

The Common or Black Ant (*formica nigra*) is a well known inhabitant of our fields and gardens, residing in great numbers between molehills and other elevated spots. It is of a brownish black colour, and of a glossy or polished surface. The eggs of this species are deposited early in the spring, and are extremely small, and of a white colour. From these are hatched the larvæ, which

are of a thickish form, destitute of legs, and somewhat resemble, in miniature, the maggots of wasps and bees. They are carefully nourished by the *neutral* or labouring Ants, till they are arrived at their full growth, when they inclose themselves in smooth, oval, pale yellow silken webs, or cases, in which state they are properly known by the mistaken title of Ant-eggs; the real eggs, as before observed, being white, and extremely small. It is generally in the months of June and July, that the larvæ thus inclose themselves. The chrysalis, if taken out of its silken case, is of a white colour, and exhibits all the limbs of the future animal in an imperfect or contracted state. During the time of their remaining in chrysalis, the neutral Ants attend them with the same care as when in their larvæ state, frequently shifting their situation, and placing them at greater or smaller elevations, according to the different state of the atmosphere.

About the latter end of July, or the beginning of August, the males and females may be observed in the nests: these differ from the neutrals in being furnished with

wings, and the female is far larger than the male; the body equalling in size that of the common window-fly, and the upper wings being very long and large. At this time of the year, the males and females emigrate in vast numbers, sometimes flying at a considerable height, and sometimes creeping along the surface. It is not uncommon to see them enter houses at this period, attracted by sweets in particular, either moist or dry. During the winter this species, like the rest of the European Ants, remain in a state of torpor, and in the spring emerge from their concealment, and recommence their labours.—DR. SHAW.

The different species of Ants, like the nations of our own species, are distinguished from each other by great diversities of manners. This is strikingly shown in the variety of modes in which they construct their habitations. Some employ merely earth as the material; some collect, for the same purpose, fragments of leaves, of bark, or of straw; others use nothing but finely pulverised portions of decayed wood. The solid substance of trees is excavated by another species into numerous apartments, having regular com-

munications with one another. Various other modifications may be observed in the architecture of the different species. The most perfect specimens of workmanship are generally exhibited by the smaller Ants. The brown Ant is particularly remarkable among the masonic tribes. Their nests are formed of parallel or concentric stories, each four or five lines in height; the partitions being about half a line in thickness, and built of such fine materials, that the interior appears perfectly smooth. On examining each of these stories, we discover chambers of different sizes, having long galleries of communication. The ceilings of the larger spaces are supported by small pillars, sometimes by slender walls, and in other cases by arches. Some cells have but a single entrance; others have passages, which open from the story underneath. In other parts, still larger central spaces, or halls, are met with, in which a great number of passages terminate, like the streets and avenues to a market place. The whole nest often contains twenty of these stories, above the level of the ground, and at least as many below it. The use of this nu-

merous series of rooms will appear in the sequel. The surface of the nest is covered with a thicker wall, and has several doors, admitting, in the day-time, free ingress and egress. This species of Ant is unable to bear much heat. During the day, therefore, and particularly when the sun shines, their doors are closed; and they either keep at home, or venture out only through the subterraneous passages. When the dew has given freshness to the nest, and softened the earthy materials on its surface, they begin to make their appearance above ground. On the first shower of rain that occurs, the whole swarm are apprized of it, and immediately resume their architectural labours. While some are engaged in removing the earth below, others are employed in building an additional story on the top; the masons making use of the materials furnished by the miners. The plan of the cells and partitions is first traced in relief on the walls, which are seen gradually to arise, leaving empty spaces between them. The beginnings of pillars indicate the situation of the future halls; and the rising partitions show the form of the intended passages.

Upon the plan thus traced they continue building, till they have arrived at a sufficient elevation. Masses of moistened earth are then applied at right angles to the tops of the walls, on each side, and continued in a horizontal direction, till they meet in the middle. The ceilings of the larger chambers are completed in the same manner; the workers beginning from the angles of the walls, and from the tops of the pillars which have been raised in the centre. The largest of these chambers, which might be compared to the *town-hall*, and which is frequently more than *two inches* in diameter, is completed with apparently as much ease as the rest. This busy crowd of masons, arriving in every direction, laden with materials for the building, hastening to avail themselves of the rain to carry on their work, and yet observing the most perfect order in their operations, present the most interesting and amusing spectacle. They raise a single story, in about seven or eight hours, forming a general roof as a covering to the whole; and they go on, adding other stories, so long as the rain affords them the facility of moulding the materials. When

the rain ceases, and is succeeded by a drying wind, before they have completed their work, the earth ceasing to adhere together and crumbling into powder, frustrates all their labours: as soon as they find this to be the case, they, with one accord, set about destroying the cells which they had begun, but had not been able to cover in, and distribute the materials over the upper story of what they had completed.

In tracing the design of the cells and galleries, each Ant appears to follow its own fancy. A want of accordance must therefore frequently take place at the points where their works join; but they never appear to be embarrassed by any difficulties of this kind. An instance is related by M. Huber, in which two opposite walls were made of such different elevations, that the ceiling of the one, if continued, would not have reached above half way of the height of the other. An experienced Ant arriving at the spot, seemed struck with the defect, and immediately destroyed the lower ceiling, built up the wall to the proper height, and formed a new ceiling with the materials of the former.

The food which Ants appear to relish above all other, is an exudation from the bodies of several species of aphids, insects which abound on the plants in the vicinity of Ant-hills. This species of honey is absorbed with great avidity by the Ants, and apparently without the least detriment to the insect that yields it. This fact had already been noticed by Boissier de Sauvages; but several very interesting particulars, as to the mode in which this excretion is procured, have been brought to light by M. Huber. He informs us, that the liquid is voluntarily given out by the aphid, when solicited to do so by the Ant, who, for that purpose, strikes it gently, but repeatedly with its antennæ, using the same motions it does when caressing its young. He is led to believe, from observation, that the aphid retains this liquor for a longer time when the Ants are not at hand to receive it. A single aphid is sufficient to supply in this way many Ants with a plentiful meal. Even those among them who had acquired wings, and could therefore have easily escaped from the Ants, if they had been so disposed, yielded this honey as freely

as the others, and with as little appearance of fear or constraint.

Most insects become torpid when their temperature is much reduced. When it approaches the freezing point, they fall into a deep lethargy, and in that state require no food. Ants present a remarkable exception to this rule; for they are not benumbed till the thermometer has sunk to 27° of Fahrenheit, or 5 degrees below the freezing point. They therefore have need of a supply of provisions during the greatest part of the winter; although it is true that they are satisfied with much less than in the summer. Their principal resource, however, under these circumstances, is still the same, namely, the honey of the aphis; which natural secretion appears to be expressly designed for the subsistence of Ants. What confirms this view of the intentions of nature is, that the aphis becomes torpid at precisely the same temperature as the Ant; a coincidence which it is hardly possible to attribute to mere chance. The winter haunts of the aphis, which are chiefly the roots of trees and shrubs, are well known to their pursuers;

and when the cold is not excessive, they regularly go out to seek their accustomed supply from these insects. Some species of Ants have even sufficient foresight to obviate the necessity of these journies; they bring these animals to their own nests, where they lodge them near the vegetables on which they feed; while the domestic Ants prevent them from stirring out, guarding them with great care, and defending them with as much zeal as they do their own young.

The accounts given of Ants inhabiting other climates, sufficiently show what formidable power they acquire, when the efforts of numbers are combined. M. Malouot mentions in his account of his travels through the forests of Guyana, his arriving at a savannah, extending in a level plain, beyond the horizon, and in which he beheld a structure that appeared to have been raised by human industry. M. de Profontaine, who accompanied him in the expedition, informed him that it was an Ant-hill, which they could not approach without danger of being devoured. they passed some of the paths frequented by the labourers, which belonged to a very large

species of black Ants. The nest they had constructed, which had the form of a truncated pyramid, appeared to be from fifteen to twenty feet in height, on a base of thirty or forty feet. He was told that when the new settlers in their attempts to clear the country, happened to meet with any of these fortresses, they were obliged to abandon the spot, unless they could muster sufficient forces to lay regular siege to the enemy. This they did, by digging a circular trench all round the nest, and filling it with a large quantity of dried wood, to the whole of which they set fire at the same time, by lighting it in different parts all round the circumference. While the entrenchments are blazing, the edifice may be destroyed by firing at it with cannon; and the Ants being by this means dispersed, have no avenue for escape, except through the flames, in which they perish.

Interesting description of the Economy, and good management of ANTS, in their subterraneous dwellings. Translated from the Memoirs of the French Academy.

“ In a room next to mine, which had been empty for a long time, there was upon a window a box full of earth, two feet deep, and fit to keep flowers in. That kind of parterre had been long uncultivated; and therefore it was covered with old plaster, and a great deal of rubbish, that fell from the top of the house, and from the walls, which together with the earth formerly imbibed with water, made a kind of dry and barren soil. The place lying to the south, and out of the reach of the wind and rain, also in the neighbourhood of a granary, was a most delightful spot of ground for Ants, and therefore they had made three nests there, doubtless for the same reason that men build cities in fruitful and convenient places, near springs and rivers.

Having a mind to cultivate some flowers, I took a view of that place, and removed a tulip out of the garden into the box ; but casting my eyes upon the Ants, continually taken up with a thousand cares, very inconsiderable with respect to us, but of the greatest importance for them, they appeared to me more worthy of my curiosity than all the flowers in the world. I quickly removed the tulip again, to be the admirer and restorer of that little commonwealth. This was the only thing they wanted ; for their policy and the order observed among them, are more perfect than those of the wisest republics ; and therefore they have nothing to fear, unless a new legislator should attempt to change the form of their government.

I made it my business to procure them all sorts of conveniencies. I took out of the box every thing that might be troublesome to them ; and frequently visited my Ants, and studied their actions. Being used to go to bed very late, I went to see them work in a moon-light night : and I frequently

got up in the night, to take a view of their labours. I always found some going up and down, and very busy: one would think that they never sleep. Every body knows that Ants come out of their holes in the day time, and expose to the sun the corn, which they keep under ground in the night. Those who have seen Ant-hillocks, have easily perceived those small heaps of corn about their nests. What surprised me at first was, that the Ants never brought out their corn, but in the night when the moon shone, and kept it under ground in the day time? which was contrary to what I had seen, and saw still practised, by those insects in other places. I quickly found out the reason of it. There was a pigeon-house not far from thence: pigeons and birds would have eaten their corn, if they had brought it out in the day time. It is highly probable they knew it by experience, and I frequently found pigeons and birds in that place, when I went to it in a morning. I quickly delivered them from those robbers: I frightened the birds away with some pieces of paper tied to the end of a

string over the window. As for the pigeons, I drove them away several times ; and when they perceived that the place was more frequented than before, they never came to it again. What is most admirable (and what I could hardly believe, if I did not know it by experience), is, that those Ants knew some days after that they had nothing to fear, and began to lay out their corn in the sun. However, I perceived they were not fully convinced of being out of all danger ; for they durst not bring out their provisions all at once, but by degrees, first in a small quantity, and without any great order, that they might quickly carry them away in case of any misfortune, watching and looking every way. At last, being persuaded that they had nothing to fear, they brought out all their corn, almost every day, and in good order, and carried it in at night.

There is a straight hole in every Ant's nest, about half an inch deep ; and then it goes down sloping into a place where they have their magazine, which I take to be a different place from that where they rest and

cat. For it is highly improbable that an Ant, which is a very cleanly insect, and throws out of her nest all the small remains of the corn on which she feeds, as I have observed a thousand times, would fill up her magazine, and mix her corn with dirt and ordure.

The corn, that is laid up by Ants, would shoot under ground, if those insects did not take care to prevent it. They bite off all the buds before they lay it up; and therefore the corn that has lain in their nests will produce nothing. Any one may easily make this experiment, and even plainly see that there is no bud in their corn. But though the bud be bitten off, there remains another inconvenience, that corn must naturally swell and rot under ground; and therefore it could be of no use to the nourishment of Ants. Those insects prevent that inconvenience by their labour and industry, and contrive the matter so, that corn will keep as dry in their nests, as in our granaries.

They gather many small particles of dry earth, which they bring every day out of their holes, and place them round, to heat

them in the sun. Every Ant brings a small particle of the earth in her pincers, lays it by the hole, and then goes and fetches another. Thus, in less than a quarter of an hour, one may see a vast number of such small particles of dry earth heaped up round the hole. They lay their corn under ground upon that earth, and cover it with the same. They perform this work almost every day, during the heat of the sun; and though the sun went from the window about three or four of the clock in the afternoon, they did not remove their corn and the particles of earth, because the ground was very hot, until the heat was over.

If any one should think that those animals should use sand, or small particles of brick or stone, rather than take so much pains about dry earth; I answer, that upon such an occasion nothing can be more proper than earth heated in the sun. Corn does not keep upon sand; besides a grain of corn that is cut, being deprived of its bud, would be filled with small sandy particles that could not easily come out. To which I add, that

sand consists of such small particles, that an Ant could not take them up one after another; and therefore those insects are seldom to be seen near rivers or in very sandy ground.

As for the small particles of brick or stone, the least moisture would join them together, and turn them into a kind of mastic, which those insects could not divide. Those particles sticking together could not come out of an ant's nest, and would spoil its symmetry.

When ants have brought out those particles of earth, they bring out their corn after the same manner, and place it round the earth. Thus one may see two heaps surrounding their hole, one of dry earth, and the other of corn; and then they fetch out a remainder of dry earth, on which doubtless their corn was laid up.

Those insects never go about this work, but when the weather is clear, and the sun very hot. I observed, that those little animals having one day brought out their corn at eleven o'clock in the forenoon, removed it, contrary to their usual custom, before

one in the afternoon: the sun being very hot, and sky very clear, I could perceive no reason for it. But half an hour after, the sky began to be overcast, and there fell a small rain, which the ants foresaw.

I have said before, that those Ants which I so particularly observed, fetched their corn out of a garret. There was some old corn in it; and as every grain was not alike, I observed that they chose the best.

I know, by several experiments, that those little animals take great care to provide themselves with wheat when they can find it, and always pick out the best; but they are able to do without it. When they can get no wheat, they take rye, oats, millet, and even crumbs of bread; but seldom any barley, unless it be in a time of great scarcity, and when nothing else can be had.

Being willing to be more particularly informed of their forecast and industry, I put a small heap of wheat in a corner of the room, where they stationed themselves; and to prevent their fetching corn out of the garret, I shut up the window, and stopt all the holes.

Though Ants are very knowing, I do not take them to be conjurers ; and therefore they could not guess that I had put some corn in that room. I perceived for several days that they were very much perplexed, and went a great way to fetch their provisions. I was not willing for some time to make them more easy ; for I had a mind to know whether they would at last find out the treasure, and see it at a great distance ; or whether smelling enabled them to know what is good for their nourishment. Thus they were some time in great trouble, and took much pains : they went up and down a great way looking out for some grains of corn. They were sometimes disappointed, and sometimes they did not like their corn, after many long and painful excursions. What appeared to me wonderful was, that none of them came home without bringing something : one brought a grain of wheat, another a grain of rye or oats, or a particle of earth, if he could get nothing else.

The window, upon which those Ants had made their settlement, looked into a garden, and was two stories high. Some

went to the farther end of the garden, others to the fifth story in quest of some corn. It was a very hard journey for them, especially when they came loaded with a pretty large grain of corn, which must needs be a heavy burthen for an Ant, and as much as he can bear. The bringing of that grain from the middle of the garden to the nest took up four hours; by which one may judge of the strength and prodigious labour of those little animals. It appears from thence, that an Ant works as hard as a man, who should carry a very heavy load on his shoulders almost every day for the space of four leagues. It is true, those insects do not take so much pains upon a flat ground; but then how great is the hardship of a poor Ant, when she carries a grain of corn to the second story, climbing up a wall with her head downwards, and her body upwards? None can have a true notion of it, unless they see those little animals at work in such a situation. The frequent stops they made in the most convenient places, are a plain indication of their weariness. Some of them were strangely perplexed, and could not get to their journey's

end. In such a case, the strongest Ants, or those that were not so weary, having carried their corn to their nests, came down again to help them. Some were so unfortunate as to fall down with their load, when they were almost come home. When this happens they seldom lose their corn, but carry it up again.

I saw one of the smallest carrying a large grain of wheat with incredible pains; when he came to the box where the nest was, he made so much haste that he fell down with his load, after a very laborious march: such an unlucky accident would have vexed a philosopher. I went down, and found him with the same corn in his paws: he was ready to climb up again. The same misfortune happened to him three times. Sometimes he fell in the middle of his way, and sometimes higher; but he never let go his hold, and was not discouraged. At last his strength failed him, he stopt; and another Ant helped him to carry his load, which was one of the largest and finest grains of wheat that an ant can carry. It sometimes happens that a corn slips out of their paws,

when they are climbing up; they take hold of it again, when they can find it; otherwise they look for another, or take something else, being ashamed to return to their nest without bringing something. This I have experienced, by taking away the grain which they looked for. All these experiments may easily be made by any one that has patience enough. They do not require so great a patience as that of Ants; but few people are capable of it.

Thus my Ants were forced to make shift for a livelihood, when I had shut up the garret, out of which they used to fetch their provisions. At last being sensible that it would be a long time before they could discover the small heap of corn which I had laid up for them, I resolved to show it to them.

In order to know how far their industry could reach, I contrived an expedient, which had good success: the thing will appear incredible to those who never considered, that all animals of the same kind, which form a society, are more knowing than others. I took one of the largest Ants and threw her

upon that small heap of wheat. She was so glad to find herself at liberty, that she ran away to her nest, without carrying off a grain ; but she observed it ; for, an hour after, all my Ants had notice given them of such a provision, and I saw most of them very busy in carrying away the corn I had laid up in the room. I leave you to judge, whether it may not be said, that they have a particular way of communicating their knowledge to one another ; for otherwise how could they know one or two hours after, that there was corn in that place ? It was quickly exhausted ; and I put in more, but in a small quantity, to know the true extent of their appetite or prodigious avarice ; for I make no doubt but they lay up provisions against the winter. We read it in holy scripture ; a thousand experiments teach us the same ; and I do not believe that any experiment has been made that shows the contrary.

I have said before, that there were three Ants' nests in that box or parterre, which formed, if I may say so, three different cities governed by the same laws, and observing the same order, and the same customs. How-

ever there was this difference, that the inhabitants of one of those holes seemed to be more knowing and industrious than their neighbours. The Ants of that nest were disposed in better order; their corn was finer; they had a greater plenty of provisions; their nest was furnished with more inhabitants, and they were bigger and stronger: it was the principal and the capital nest. Nay, I observed that those Ants were distinguished from the rest, and had some pre-eminence over them.

Though the box full of earth, where the Ants had made their settlement, was generally free from rain; yet it rained sometimes upon it, when a certain wind blew. It was a great inconvenience for those insects: Ants are afraid of water; and when they go a great way in quest of provisions, and are surprised by the rain, they shelter themselves under some tile, or something else, and do not come out until the rain is over. The Ants of the principal nest found out a wonderful expedient to keep out the rain: there was a small piece of flat slate, which they laid over the hole of their nest in the day-

time, when they foresaw it would rain, and almost every night. Above fifty of those little animals, especially the strongest, surrounded that piece of slate, and drew it equally in wonderful order: they removed it in the morning, and nothing could be more curious than to see those little animals about such a work. They had made the ground uneven about their nest, insomuch that the slate did not lie flat upon it, but left a free passage underneath. The Ants of the other two nests did not so well succeed in keeping out the rain. They laid over their holes several pieces of old dry plaster one upon the other; but they were still troubled with the rain; and the next day they took much pains to repair the damage. Hence it is that those insects are so frequently to be found under tiles, where they settle themselves to avoid the rain. Their nests are at all times covered with those tiles, without any incumbrance, and they lay out their corn and their dry earth in the sun about the tiles, as one may see every day. I took care to cover the two Ants' nests that were troubled with the

rain : as for the capital nest, there was no need of exercising my charity towards it.

M. de la Loubère says, in his relation of Siam, that, in a certain part of that kingdom, which lies open to great inundations, all the Ants make their settlements upon trees : no Ants' nests are to be seen any where else. I need not insert here what the author says about those insects : you may see his relation.

Here follows a curious experiment, which I made under the same ground, where I had three Ants' nests. I undertook to make a fourth, and went about it in the following manner :—In a corner of a kind of terrace, at a considerable distance from the box, I found a hole swarming with Ants, much larger than all those I had already seen ; but they were not so well provided with corn, nor under so good a government. I made a hole in the box like that of an Ant's nest ; and laid, as it were, the foundations of a new city. Afterwards I got as many Ants as I could out of the nest in the terrace, and put them into a bottle, to give them a new habitation in my box ; and because I was afraid they would

return to the terrace, I destroyed their old nest, pouring boiling water into the hole, to kill those Ants that remained in it. In the next place, I filled the new hole with the Ants that were in the bottle; but none of them would stay in it. They went away in less than two hours; which made me believe, that it was impossible to make a fourth settlement in my box.

Two or three days after, going accidentally over the terrace, I was much surprised to see the Ants nest which I had destroyed, very artfully repaired. I resolved to destroy it entirely, and to settle those Ants in my box. To succeed in my design, I put some gunpowder and brimstone into their hole, and sprung a mine, whereby the whole nest was overthrown; and then I carried as many Ants as I could get into the place which I designed for them. It happened to be a very rainy day, and it rained all night, and therefore they remained in the new hole all that time. In the morning, when the rain was over, most of them went to repair their old habitation; but finding it impracticable, by reason of the smell of the powder

and brimstone, which kills them, they came back again, and settled in the place I had appointed for them. They quickly grew acquainted with their neighbours, and received from them all manner of assistance out of their holes. As for the inside of their nest, none but themselves were concerned in it, according to the inviolable laws established among those animals.

An Ant never goes into any other nest but her own; and if she should venture to do it, she would be turned out, and severely punished. I have often taken an Ant out of one nest, to put her into another; but she quickly came out, being warmly pursued by two or three other Ants. I tried the same experiment several times with the same Ant; but at last the other Ants grew impatient, and tore her to pieces. I have often frightened some Ants with my fingers, and pursued them as far as another hole, stopping all the passages to prevent their going to their own nest. It was very natural for them to fly into the next hole: many a man would not be so cautious, and would throw himself out of the windows, or into a well, if he were pursued by

assassins. But the Ants I am speaking of avoided going into any other hole but their own, and rather tried all other ways of making their escape. They never fled into another nest, but at the last extremity; and sometimes chose rather to be taken, as I have often experienced. It is therefore an inviolable custom among those insects, not to go into any other hole but their own. They do not exercise hospitality; but they are very ready to help one another out of their holes. They put down their loads at the entrance of a neighbouring nest; and those that live in it, carry them in.

They keep up a sort of trade among themselves; and it is not true that those insects are not fond of lending: I know the contrary: they lend their corn; they make exchanges; they are always ready to serve one another; and I can assure you, that more time and patience would have enabled me to observe a thousand things more curious and wonderful than what I have mentioned. For instance, how they lend and recover their loans; whether it be in the same quantity, or with usury; whether they pay the stran-

gers that work for them, &c. I do not think it impossible to examine all those things; and it would be a great curiosity to know by what maxims they govern themselves: perhaps such a knowledge might be of some use to us.

They are never attacked by any enemies in a body, as it is reported of bees. Their only fear proceeds from birds, which sometimes eat their corn when they lay it out in the sun; but they keep it under ground, when they are afraid of thieves. It is said that some birds eat them; but I never saw an instance of it. They are also infested by small worms; but they turn them out and kill them. I observed, that they punished those Ants which probably had been wanting to their duty; nay, sometimes they killed them, which they did in the following manner:—Three or four Ants fell upon one, and pulled her several ways, until she was torn in pieces. Generally speaking, they live very quietly; from whence I infer that they have a very severe discipline among themselves, to keep so good an order; or that they are great lovers of peace, if they have no occasion for any discipline.

Was there ever a greater union in any commonwealth? Every thing is common among them; which is not to be seen any where else. Bees, of which we are told so many wonderful things, have each of them a hole in their hives; their honey is their own; every bee minds her own concerns. The same may be said of all other animals. They frequently fight, to deprive one another of their portion. It is not so with Ants: they have nothing of their own; a grain of corn which an Ant carries home, is deposited in a common stock: it is not designed for her own use, but the whole community: there is no distinction between a private and a common interest. An Ant never works for herself, but for the society.

Whatever misfortune happens to them, their care and industry find out a remedy for it; nothing discourages them. If you destroy their nests, they will be repaired in two days. Any body may easily see how difficult it is to drive them out of their habitations without destroying the inhabitants; for, as long as there are any left, they will maintain their ground.

I had almost forgot to state, that mercury has hitherto proved a mortal poison for them; and that it is the most effectual way of destroying those insects. I can do something for them in this case: perhaps you will hear in a little time that I have reconciled them to mercury.

As the small Ant (for she instructs the man,
And preaches labour) gathers all she can,
And brings it to increase her heap at home,
Against the winter, which she knows will come:
But when that comes, she creeps abroad no more,
But lies at home, and feasts upon her store.

CREECH.

Anecdote of THE GREAT HILL ANT, *or*
HORSE EMMET.

A GENTLEMAN of Cambridge one day remarked an Ant dragging along what, with respect to its strength, might be denominated a piece of timber. Others were severally em-

ployed, each in its own way. Presently this little creature came to an ascent, where the weight of the wood seemed for a while to overpower him : he did not remain long perplexed with it ; for three or four others observing his dilemma, came behind, and pushed it up. As soon, however, as he had got it on the level ground, they left it to his care, and went to their own work. The piece he was drawing happened to be considerably thicker at one end than the other. This soon threw the poor fellow into a fresh difficulty : he unluckily dragged it between two bits of wood. After several fruitless efforts, finding it would not go through, he adopted the only mode that a reasonable being in similar circumstances could have taken ; he came behind, pulled it back again, and turned it on its edge ; when, running again to the other end, it passed through without the least difficulty."—BINGLEY.

THESE Emmets, how little they are in our eyes !
We tread them to dust, and a troop of them dies,
 Without our regard or concern :
Yet, as wise as we are, if we went to their school,
There's many a sluggard, and many a fool,
 Some lessons of wisdom might learn.

They don't wear their time out in sleeping or play,
But gather up corn in a sun-shiny day,
 And for winter they lay up their stores :
They manage their work in such regular forms,
One would think they foresaw all the frosts and
 the storms,
 And so brought their food within doors.

But I have less sense than a poor creeping Ant,
If I take not due care for the things I shall want,
 Nor provide against dangers in time,
When death and old age shall stare in my face,
What a wretch shall I be in the end of my days,
 If I trifle away all their prime !

Now, now, while my strength and my youth are
 in bloom,
Let me think what will save me when sickness
 shall come,
 And pray that my sins be forgiven.
Let me read in good books, and believe, and obey,
That when death turns me out of this cottage of
 clay,
 I may dwell in a palace in heaven.

DR. WATTS.

TERMES, or WHITE ANT.

Behaviour of the Soldiers, when their Garrison is attacked.

THE first object of admiration which strikes upon opening their hills, is the behaviour of the soldiers. If you make a breach in a slight part of the building, and do it quickly with a strong hoe or pick-axe, in the space of a few seconds a soldier will run out, and walk about the breach, as if to see whether the enemy is gone, or to examine what is the cause of the attack. He will sometimes go in again, as if to give the alarm; but most frequently, in a short time is followed by a large body, who rush out as fast as the breach will permit them; and so they proceed, the number increasing, as long as any one continues battering their building. It is not easy to describe the rage and fury they show. In their hurry they frequently miss their hold, and tumble down the sides of the hill, but recover themselves as quickly as possible; and, being blind, bite every thing they run against, and thus make a crackling noise;

while some of them beat repeatedly with their forceps upon the building, and make a small vibrating noise, something shriller and quicker than the ticking of a watch. If they get hold of any one, they will in an instant let out blood enough to weigh against their whole body; and if it is the leg they wound, you will see the stain upon the stocking extend an inch in width. They make their hooked jaws meet at the first stroke, and never quit their hold, but suffer themselves to be pulled away by the leg, and piece after piece, without the least attempt to escape. On the other hand, keep out of their way, and give them no interruption, and they will in less than half an hour retire into the nest, as if they supposed the wonderful monster that damaged their castle to be gone beyond their reach. Before they are all got in, you will see the labourers in motion, and hastening in various directions, towards the breach, every one with a burthen of mortar in his mouth, ready tempered. This they stick upon the breach as fast as they come up, and do it with so much dispatch and facility, that although there are thousands, or rather millions, of them, they

never stop or embarrass one another ; and you are most agreeably deceived, when, after an apparent scene of hurry and confusion, a regular wall arises, gradually filling up the chasm. While they are thus employed, almost all the soldiers are retired quite out of sight.

A renewal of the attack, however, instantly changes the scene. At every stroke we hear a loud hiss ; and on the first the labourers run into the many pipes and galleries with which the building is perforated, which they do so quickly that they seem to vanish, for in a few seconds they are all gone, and the soldiers rush out as numerous and vindictive as before.

In various parts of America and the West India islands, the ravages committed by Ants are incredible. One of the chief of those destroyers is the *formica omnivora* of Linnaeus, a very small species of a brown or chestnut colour. It is extremely voracious, attacking every animal substance to which it can gain access. It is said to be so numerous in some districts, that a deer, hog, &c. being killed, and left on the ground by night, will,

by the next morning, have the flesh entirely cleared from the bones, and be reduced to a complete skeleton.

THE AMAZONS, or WARRIOR ANTS.

THERE is one species of large Ants, which M. Huber denominates Amazons, who inhabit the same nests with an inferior species, namely, the dark ash-coloured Ant (*noire cendrée*), and whom we may call their auxiliaries. As soon as the heat of summer has set in, the Amazons muster their forces; and, leaving the auxiliaries to take care of the nest, march out in regular order, sometimes dividing their forces into two expeditions, but generally proceeding in one united army to the point of attack, which is always a nest belonging to Ants of the same species as the auxiliaries with whom they live. These resist the aggression with great courage; but are soon compelled to fly from the superior force of the invaders, who enter at the breach they have made, and proceed to plunder the

nest of all the eggs and larvæ which they can carry off. They return laden with this booty to their own habitations, and consign it to the care of the ash-coloured Ants belonging to their community, who are waiting in eager expectation to receive it. These eggs and larvæ are watched, nourished, and reared to maturity, with the same care and assiduity which the auxiliaries bestow on their own progeny; and thus they become, in process of time, inmates in the same society with those who had originally kidnapped them; and towards whom, had they been brought up at home, they would have cherished an instinctive and inveterate hatred. The sole object of the Amazons in these expeditions is, to procure this supply of recruits for the advantage of the community to which they belong; and the sole business of their lives is to carry on these marauding adventures. They do not assist in any of the ordinary labours of the community. The tasks of building and repairing their city, of providing nourishment for the whole society, of rearing the brood of young, both of their own species and that of their companions, are en-

trusted solely to the race of auxiliaries, to whose services they have become entitled by the right of conquest. In times of peace the Amazons are totally inactive, and dependent on the labouring classes of the auxiliaries, who feed and caress them, minister to all their wants, and carry them wherever the temptation of the air is most grateful. In a word, they are gentlemen waited on by their domestics, who appear to retain no sense of the injury that has been done them by their masters, but bear towards them the tender affection of children towards their parents. The more cruel relation of master and of slave seems, indeed, to be entirely excluded from this singular association of insects.

Although many naturalists have already studied the history of Ants, yet much discordance and obscurity has prevailed with regard to many essential points in their economy; a circumstance that has arisen from their never having been able to see what was going on in the interior of their nests, which is the scene of the most important and interesting features of their history. To M. Huber belongs the merit of inventing an apparatus,

and method of observation, which bring within view all the operations which these insects had hitherto conducted in secret. The difficulties he had to contend with, in contriving a glass case which would admit the light into their apartments, without alarming or disturbing them in their employments, were at first great, but by perseverance were at length overcome. Even methods which succeeded for a time, were frequently defeated by the sagacity of these insects, who are extremely jealous of intruders, exquisitely sensible to all variations of temperature, and always alarmed at the presence of light in their subterraneous abodes. At last, by placing wooden boxes with glass windows, in which he had introduced a nest of Ants, on a table in his study, and keeping them prisoners, by immersing the feet of the table in buckets of water, he was enabled to make them the subject of continued observation, and vary his experiments on the same individuals. Habit, and the experience that no evil was intended, gradually reconciled the Ants to the visits of their inspector. By comparing the results of these observations and experiments with si-

milar ones made on the same species of Ants in their natural state of freedom, he satisfied himself that perfect reliance could be placed on their accuracy.

THE GREEN ANTS OF NEW HOLLAND.

THESE little animals form their habitations by bending down the leaves of trees, and gluing the ends of them together, so as to form a purse. Though these leaves are as broad as a man's hand, they perform this feat by main strength, thousands of them being employed in holding down the leaves, while multitudes of others apply the glutinous matter. Captain Cook's people ascertained themselves that this was the case, by sometimes disturbing them at their work; in which case the leaf always sprung up with an elasticity which they could not have supposed that such minute insects were capable of overcoming. For this curiosity however they smarted pretty severely; for thousands of those little enemies instantly threw themselves upon the

aggressors, and revenged themselves by their bites or stings for the interruption they had met with. These were little less painful at first than the sting of a bee, but the pain did not last above a minute.

Another species of Ants in this country, burrow themselves in the root of a plant, which grows on the bark of trees, like the Misseltree, and which is commonly as big as a large turnip. When this is cut, it appears intersected with innumerable winding passages, all filled up with these animals; notwithstanding which, the vegetation of the plant suffers no injury. These Ants do not give pain by their stings, but produce an intolerable itching by crawling about on the skin. They are about the size of the small Red Ant in this country. Another sort, which do not molest in any manner, resemble the White Ants of the West Indies. They construct nests three or four times as large as a man's head, on the branches of trees; the outsides being composed of some vegetable matter along with a glutinous substance. On breaking the outer crusts of these Hives, innumerable cells appear swarming with in-

habitants, in a great variety of winding directions, all communicating with each other, and with several other nests upon the same tree. They have also another house built on the ground, generally at the root of a tree, formed like an irregularly sided cone; sometimes more than six feet high, and nearly as much in diameter. The outside of these nests is of well-tempered clay, about two inches thick, and within are the cells, which have no opening outward. One of these is their summer, and the other their winter dwelling, communicating with each other by a large avenue leading to the ground, by a subterraneous passage. The ground structures are proof against wet, which those in the branches are not.—ENCYC. BRIT.

We shall now conclude our description of this interesting little Insect with the following Letter, which we trust cannot be read without pleasure.

An Account of the Revolution in an Emmet's Nest; occasioned by kicking up a Tile in Ormesby Park, in Lincolnshire. Related in a Letter from the Princess Pismirella to her friend Granaria.

OUR whole state is in the utmost confusion, and our distresses are so great, that I have neither leisure nor spirits enough to give you a full account of them. However, I must send you such a one as I can; that it may induce you the sooner to come and visit one whom you have always loved, and who never wanted a friend to condole with so much as on this melancholy occasion.

You know how happily our whole nation used to live under the king my father; and have often admired with me, that firm covering, which Providence had laid all over our capital: and which (next to my father's wise and mild administration) was the greatest cause of the general happiness of all our people. By day, when that globe of fire in the Heavens (which ripens the corn for us) was too violent, and scorched all the neighbouring nations of Emmets; we had a safe retirement, where we were neither daz-

zled with its light, nor tormented with the too great heat of its beams. By night, when the clouds thickened, and streamed down in little rivers, our covering was only made the more smooth by it; and none of its moisture ever penetrated into our houses or granaries. Our people always went out cheerfully to work; and if they found the heats too violent, or saw a shower drawing together in the clouds, had each his grotto to retire to under this red piece of rock, that extended itself over all our habitations. There was not then any people so happy as we were; and now, alas! there is scarcely so miserable a people on the face of the whole earth, as we are become at one blow.

On the first day of the last full moon, on a sudden I thought I saw all that part of the red rock which was over my apartment, trembling, and in agitation; when, in an instant, other parts of it appeared over my head, and then others, till at last it left my apartments, and the whole city quite exposed to the air. All this was done almost in an instant: in much less time than I have been writing. The king, my father, was then in council with the chiefs of the

city, and found himself exposed all at once to the glaring light of the day, as well as the rest of us. 'Tis impossible as yet to tell all the damage that has been done. The walls of the grand house for the infants, are tumbled in; and great numbers of the little innocents perished under the rubbish. The eggary has fared yet worse. Our store-houses, and great part of the grain in them are destroyed. In one word, almost all our houses, and the palace itself, is nothing but one heap of ruins. The heavy rains which fell that afternoon, and all the next night, have completed our misfortunes; and we have scarcely enough left alive to bury the dead.

It is thought by most, that the occasion of this great calamity to our nation, was an earthquake; for it must, they say, have required some general disorder in Nature, to move so vast, and so extended a rock, as that was over us. Others say, it was one of those prodigious monsters, which Providence (out of its goodness to us) allows but two legs to walk upon, that they may not crush yet more regiments of our people to death than they

do. The guards who were on duty when this accident happened, were all destroyed, except one; who is very much wounded, and now lies dangerously ill. He has a violent delirious fever; but says at intervals, that just before this happened, one of these monsters, actually drew towards the city; and that he saw him suddenly raise up one of those vast columns which support him, and drive away the rock before him with the end of it. How true this account may be, Heaven only knows; but surely it is not unlike the character of those pests of the whole animal world, who were certainly created by the evil principle; and who seem to be the only creatures on the face of the earth, who delight in doing mischief to others, without any view of doing good to themselves.

Whatever was the cause of our sufferings, never was there a people more distressed than we are. Come therefore as soon as you possibly can, to comfort your afflicted friend, who could scarcely write thus much for tears, and who yet has not told you the half of our misfortunes.

BEEES.—*APIS*.



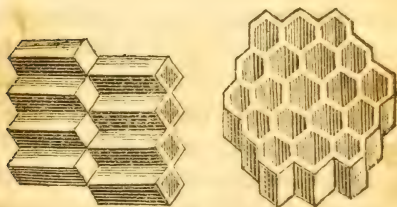
Their Sagacity and Habits.

THESE Insects are very numerous, and differ considerably in their habits. Some are found in extensive communities, constructing, with the utmost art, cells for their young, and repositories for their food ; while others both dwell and work in solitude. The whole tribe live on the nectar of flowers and on ripe fruit. We shall, however, more

particularly confine ourselves to the description of the Hive Bee, as related by the Rev. Mr. Bingley.

In the formation of their combs, the present insect seems to resolve a problem which would not be a little puzzling to some geometricians, namely, "A quantity of wax being given to make of it equal and similar cells of a determined capacity, but of the largest size in proportion to the quantity of matter employed, and disposed in such a manner as to occupy in the hive the least possible space." Every part of this problem is completely executed by the Bees. By applying hexagonal cells to each others' sides, no void spaces are left between them; and though the same end might be accomplished by other figures, yet such would necessarily require a greater quantity of wax. Besides hexagonal cells are better fitted to receive the cylindrical bodies of these insects. A comb consists of two strata of cells applied to each other's ends. This arrangement both saves room in the hive, and gives a double entry into the cells of which the comb is composed. As a further saving of wax, and for prevent-

ing void spaces, the bases of the cells in one stratum of a comb serve also for bases to the opposite stratum. In short, the more minutely the construction is examined, the more will the admiration of the observer be excited. The walls of the cells are so extremely thin that their mouths might be thought in danger of suffering by the frequent entering and issuing of the bees. To prevent this disaster, however, they make a kind of rim round the margin of each cell, and this rim is three or four times thicker than the walls. The following cut will give a clear idea of the forms of these cells.



It is difficult to perceive, even with the assistance of glass-hives, the manner in

which bees operate when constructing their cells. They are so eager to afford mutual assistance; and for this purpose so many of them crowd together, and are perpetually succeeding each other, that their individual operations can seldom be distinctly observed. It has, however, been plainly discovered, that their two jaws are the only instruments they employ in modelling and polishing the wax. With a little patience and attention, we perceive cells just begun; we likewise remark the quickness with which a bee moves its teeth against a small portion of the cell. This portion the animal by repeated strokes on each side, smooths, renders compact, and reduces to a proper thinness. While some of the hive are lengthening their hexagonal tubes, others are laying the foundations of new ones. In certain circumstances, when extremely hurried, they do not complete their new cells, but leave them imperfect till they have begun a number sufficient for their present exigencies. When a bee puts its head a little way into a cell, we easily perceive it scraping the walls with the points of its teeth, in order to detach such useless and

irregular fragments as may have been left in the work. Of these fragments the bee forms a ball about the size of a pin's head, comes out of the cell, and carries this wax to another part of the work, where it is wanted; it no sooner leaves the cell than it is succeeded by another Bee, which performs the same office; and in this manner the work is successively carried on till the cell is completely polished.

Their mode of working, and the disposition of their labour, when put into an empty hive, do much honour to the sagacity of Bees. They immediately begin to lay the foundations of their combs, which they execute with surprising quickness and alacrity. Soon after they begin to construct one comb, they divide into two or three companies, each of which in different parts of the hive is occupied in the same operations. By this division of labour, a great number of Bees have an opportunity of being employed at the same time, and consequently, the common work is sooner finished. The combs are generally arranged in a direction parallel to each other. An interval or street between

them is always left, that the Bees may have a free passage, and an easy communication with the different combs in the hive. These streets are just wide enough to allow two Bees to pass one another. Beside these parallel streets, to shorten the journey when working, they leave several cross passages, which are always covered.

They are extremely solicitous to prevent insects of any kind from getting admittance into their hives. To accomplish this purpose, and in order to shut out the cold, when they take possession of a new hive, they carefully examine every part of it; and if they discover any small holes or chinks, they immediately paste them up firmly with a resinous substance which differs considerably from wax. This substance was known to the ancients by the name of *propolis* or Bee-glue. Bees use the propolis for rendering their hives more close and perfect, in preference to wax, because it is more durable, and more powerfully resists the vicissitudes of the weather. This glue is not, like the wax, procured by an animal process. The Bees collect it from different trees, as the poplars,

the birches, and the willows. It is a complete production of nature, and requires no additional manufacture from the animals by which it is employed. After a bee has procured a quantity sufficient to fill the cavities of its two hind legs, it repairs to the hive. Two of its companions instantly draw out the propolis, and apply it to fill up such chinks, holes, or other deficiencies as they find in their habitation. But this is not the only use to which Bees apply the propolis. They are extremely solicitous to remove such insects or foreign bodies as happen to get admission into the hive. When so light as not to exceed their powers, they first kill the insect with their stings, and then drag it out with their teeth. But it sometimes happens that an ill-fated snail creeps into the hive. This is no sooner perceived than it is attacked on all sides, and stung to death. But how are the Bees to carry out so heavy a burthen? Such a labour would be in vain. To prevent the noxious odours consequent on its putrefaction, they immediately embalm it, by covering every part of its body with propolis, through which no effluvia can escape.

When a snail with a shell gets entrance, to dispose of it gives much less trouble and expense to the Bees. As soon as it receives the first wound from a sting, it naturally retires within its shell. In this case, the Bees, instead of pasting it all over with propolis, content themselves with gluing all round the margin of the shell; which is sufficient to render the animal for ever immovably fixed.

But propolis, and the materials for making wax, are not the only substances that these industrious animals have to collect. As, besides the whole winter, there are many days in the summer in which the Bees are prevented by the weather from going abroad in quest of provisions; they are, therefore, under the necessity of collecting and amassing in cells destined for that purpose large quantities of honey. This they extract, by means of their trunk, from the nectariferous glands of flowers. The trunk of the Bee is a kind of rough cartilaginous tongue. After collecting a few small drops of honey with this, the animal carries them to its mouth, and swallows them. From the gullet they pass into the first stomach, which is more or less

swelled in proportion to the quantity of honey it contains. When empty, it has the appearance of a fine white thread; but, when filled with honey, it assumes the figure of an oblong bladder, the membrane of which is so thin and transparent, that it allows the colour of the liquid it contains to be distinctly seen. This bladder is well known to children who live in the country; they cruelly amuse themselves with catching Bees, and tearing them asunder in order to suck the honey. The Bees are obliged to fly from one flower to another till they fill their first stomachs. When they have accomplished this, they return directly to the hive, and disgorge in a cell the whole honey they have collected. It not unfrequently happens, however, that on its way to the hive the Bee is accosted by a hungry companion. How the one manages to communicate its wants to the other, it is perhaps impossible to discover. But the fact is certain, that when two Bees meet in this situation, they mutually stop, and the one whose stomach is full of honey, extends its trunk, opens its mouth, and, like a ruminating animal, forces up the honey into that

cavity. The hungry Bee, with the point of its trunk, sucks the honey from the other's mouth. When not stopped on the road, the Bee proceeds to the hive, and in the same manner offers its honey to those who are at work, as if it meant to prevent the necessity of quitting their labour in order to go in quest of food. In bad weather, the Bees feed on the honey laid up in open cells; but they never touch their reservoirs while their companions are enabled to supply them with fresh honey from the fields. But the mouths of those cells which are destined for preserving honey during the winter, they always cover with a lid, or thin plate of wax.



How numerous soever the Bees in one swarm may appear to be, they all originate from a single parent. It is indeed surprising, that one small insect should in a few months give birth to so many young; but, on opening her body at a certain time of the year, eggs to the number of many thousands are to be found contained in it.

The queen is easily distinguished from the rest by the size and shape of her body. On her depends the welfare of the whole community; and, by the attention that is paid to all her movements, it is evident how much they depend upon her security. She is seen at times with a numerous retinue, marching from cell to cell, plunging the extremity of her body into each of them, and leaving in each an egg.

A day or two after this egg is deposited, the grub is excluded from the shell, having the shape of a maggot rolled up in a ring, and lying softly on a bed of whitish-coloured jelly, on which it begins to feed. The common Bees then attend with astonishing tenderness and anxiety: they furnish it with food, and watch over it with unremitting assi-

duity. In about six days the grub arrives at its full growth, when its affectionate attendants shut up the mouth of its apartment with wax, to secure it from injury. Thus inclosed, it soon begins to line the walls of its cell with a silken tapestry, in which it undergoes its last transformation.

The neuter Bees in a hive amount to the number of 16,000 or 18,000. These are armed with stings, and form the only labouring part of the community. It is pleasant to see them in the act of collecting the *farinae* of flowers for the basis of their wax. They roll themselves over the stamina, the dust of which adheres to their hairs; then, bringing their feet over their bodies, they fill it with two small baskets or cavities edged with hairs, appended to their hind legs. As soon as a Bee thus laden appears near the hive, others go out to meet it, and, taking the *farinae* from its legs, swallow it; their stomachs being the laboratory where it is converted into genuine wax. This operation being over, each individual disgorges it in the consistency of dough, and then moulds it into proper form.

The males are called *drones*: they are un-

armed; and are always killed by the neuters about the month of September.

Heat is the life of these insects. The least degree of cold benumbs them; and in winter, unless they are all crowded together, they perish. Their enemies are the wasp and the hornet, who with their teeth rip them open to suck out the honey contained in their bladder. Sparrows have also been seen with one in their bill, and another in each claw.

There is so great a degree of attachment subsisting between the working Bees and their queen, that if, by any accident, she is destroyed, the labours of the community are at an end, and the rest of the animals leave the hive and disperse. If, however, another queen be given them, joy springs up, and they crowd around her, and soon again apply to their operations. Even the prospect of seeing a queen will support them: this has been proved by giving to a hive that had lost its own queen the crysalis of another. If a queen be taken from a hive and kept apart from the working Bees, she will refuse to eat, and in the course of four or five days will die of hunger.

Mr. Wildman, whose remarks on the management of Bees are well known, possessed a secret by which he could at any time cause a hive of Bees to swarm upon his head, shoulders, or body, in a most surprising manner. He has been seen to drink a glass of wine with the Bees all over his head and face more than an inch deep ; several fell into the glass, but they knew him too well to sting him. He could even act the part of a general with them, by marshalling them in battle array upon a large table. There he divided them into regiments, battalions, and companies, according to military discipline, waiting only for his word of command. The moment he uttered the word, *march!* they began to march in a very regular manner in rank and file, in the manner of soldiers. To these, his Lilliputians, he also taught so much politeness, that they never attempted to sting any of the numerous company, which at different times resorted to admire this singular spectacle.

STEDMAN relates in his travels, that, during his stay in Surinam, he had built himself

a light wooden house, such as are usual in that country. Once a stranger called upon him, who had no sooner entered the house than he immediately ran out again, as if distracted, and plunged into a neighbouring stream. The man had a multitude of Bees upon his head, which were stinging him. Stedman's negro went to his assistance, and extricated him. Stedman wondered both at his having had this swarm of Bees in his house without knowing it, and also that they had conducted themselves so peaceably towards him. The negro gave him the following explanation of the matter, according to his own ideas. He told him they would never do him any injury, because they knew that they were upon his premises; and in fact they never made any attempt to attack him, even though he ventured to shake their nest. The negro told him also that there was in that country an old decayed tree, in which Bees and birds lived in perfect harmony together. If a strange bird came and wanted to catch Bees, the birds that dwelt in the tree immediately drove them away; and the Bees in like manner would suffer no strange

Bees to come into the tree. Thus they seemed to have concluded an offensive and defensive alliance with each other. That almost all the negroes considered this tree as sacred, is not to be wondered at: the same would probably have been the case in many parts of Europe.

Affection of Bees.

AN elderly lady at Nantes, who had an estate in the neighbourhood of that town, where she used generally to pass the summer, had a remarkable partiality for Bees, and kept a great number of them upon her estate. She took great pleasure in attending these little insects. Towards the end of May, 1777, this lady, having been taken ill, was conveyed to Nantes, where she died a few days after. On the day when she was to be interred, an enormous number of Bees made their appearance in the house where the body lay, and settling upon the coffin, would not be driven away. A friend of the deceased, wishing to ascertain whether these were the same Bees that she had taken such tender

care of when living, repaired immediately to the estate, where he found all the hives emptied of their inhabitants.

IN the spring before the flowers are blown, or in autumn when they are all gone off, the Bees being at a loss for honey, endeavour to steal from other stocks, and on these occasions such fierce wars often ensue between the contending parties, that the ground before the hive is found strewed with thousands of dead Bees.

Ingenuity of Bees in getting rid of the carcass of a Snail, which had intruded itself into their Hive, from that instructive and pleasing work, SPECTACLE DE LA NATURE.

A FEW days since (observes the author) a snail took it into its head to steal into the glass hive in my window. There was no entrance to pass through but the proper one, and in the animal went. The porters received him very rudely at the gate; and the first attack they made upon him with their

stings, obliged him to march with more expedition; but the stupid creature, instead of retreating, thought to save himself by going forwards, and he advanced into the very middle of the hive; upon which a whole troop of Bees fastened upon him at once, and he immediately expired under their strokes. The conquerors were then in no little perplexity how to get rid of the carcass, and a council was instantly held upon that occasion.

From first to last, the most experienced sages among them reasoned in this manner: To drag the carcass out by main strength, is an impossibility; the mass is much too unwieldy, and beside, the body is fixed to the floor of the hive by its own glue; and to leave it where it lies, would be very inconvenient, because it would prove an alluring regale to the common flies, and at the same time be liable to corruption and worms; and those worms, when they have devoured the snail, will infallibly ascend to the comb, and attack the young Bees. The damage was evident, and required an immediate remedy; but you will hardly guess the

dexterity with which they accomplished it. They incrusted the whole snail with glue, and cemented it so close, that all the external air was excluded, and as no insect could have access, to deposit her eggs in the carcass, so, when this should be reduced to corruption, no malignant steams would transpire through the inclosure.

SWAMMERDAM drew the mother of a swarm of Bees by one of her legs with a small bit of thread fastened to a long pole ; the whole swarm immediately assembled round the end of the pole to cover the mother Bee. This swarm was carried wherever he pleased in pursuit of the pole.

A man who called himself the Bee's master, doubtless was in possession of the mother Bee ; and from the natural attachment of the Bees to her, he conducted them as he pleased.

“ TELL me, ye studious, who pretend to see
Far into nature's bosom, whence the Bee

Was first inform'd her vent'rous flight to steer,
Through trackless paths, and an abyss of air?
Whence she avoids the slimy marsh, and knows,
The fertile hills, where sweeter herbage grows,
And honey making flowers, their op'ning buds }
disclose ;
How from the thicken'd mist, and setting sun,
Finds she the labour of her day is done?
Who taught her against winds and rains to strive,
To bring her burthen to the certain hive ;
And through the liquid fields again to pass,
Duteous, and heark'ning to the sounding brass?

Philosophical description of Bees.

A GLASS hive represents a city of sixteen or eighteen thousand inhabitants. This city is a monarchy, consisting of a queen, grandees, soldiers, artificers, porters, houses, streets, gates, magazines, and the strictest civil policy. The queen lives in a palace in the farther part of the town; some of the cells (which run perpendicular from the top of the hive) are larger than the rest, and belong to those, who, after the queen, hold the first rank in the commonwealth; the others are inhabited by the people at large. The cells are all

public buildings, which belong to the society in common ; for among these happy beings there is no *meum* and *tuum*. Some of these edifices are appropriated as magazines for a store of honey ; others for the daily provision of the industrious ; others are allotted to receive their eggs, and to lodge the worm from which the infant bee draws its vital existence.

In the hive there is usually but one queen, six or eight hundred, or even a thousand males, called *drones*, and from fifteen to sixteen thousand Bees, without distinction of sex, who carry on the policy and manufacture of the commonwealth. The *mother bee*, or the queen, is the soul of the community, and were it not for her, every thing would languish ; for when she is secreted from the city, the inhabitants lose all care of posterity, making neither wax nor honey. Her subjects pay her majesty the most dutiful respect, and accompany her whenever she goes abroad, or is carried from her palace : and such is their address, that they perform their several functions without being ordered, or giving their queen, the least trouble or uneasiness.

Her only business is, to people her dominions, and this she fulfils with so much exactitude, as to merit the most honourable of all titles,—the *Parent of her Country*. To insure the love of her subjects, 'tis necessary she should have from ten to twelve thousand children in the space of seven weeks, and one year with another, from thirty to forty thousand. Her sacred majesty is easily distinguished by a long and slender shape. Her wings are however much shorter: for her people have wings which cover the whole body; in her they terminate about half way, at the third ring of her admired form. The queen indeed has, like the rest, a sting and a bladder of poison; but she is not so easily provoked to call them into her assistance: when she does, the wound is deeper and much more painful.

The *drones*, or the *thousand husbands of this little queen* are found in the hive only from the beginning of May to the end of July. Their number increases every day during that period of time, and is at the greatest when the queen is breeding:—and strange to tell, in a few days after they

die a violent death ! Their way of living is also peculiar to themselves : for excepting the moments they are employed in paying their court to their sovereign mistress, they are quite idle, enjoying a most luxurious table ; eating only the finest honey ; whereas the common people live in a great measure on the wax. These rise early, go abroad, and do not think of returning home till they are loaded with wax or honey, for the good of the community. The drones, on the contrary, do not stir abroad till the hour of eleven, when they take the air, and amuse themselves till near six in the evening. They have no stings, nor those long elastic teeth with which the other Bees work up the honey ; nor have they those kind of hollows, which serve them for baskets to bring it to their respective habitations.

The commonalty have an infinite number of surprising particularities, a few of which are, that their head seems to be triangular, and the point of the triangle is formed by the meeting of two long elastic teeth, which are concave on the inside. In the second and third pair of their legs, is a part called the brush, of a square figure, with its outward

surface polished and sleek, and its inward hairy, like a common brush. With these two instruments they prepare their wax and honey. The materials of their wax lie in the form of dust upon the *amina* of flowers. When the Bee would gather this dust, she enters the flower, and takes it up by means of her brush, to which it easily adheres. She comes out all covered with it, sometimes yellow, sometimes red, or according to its native colour. If those particles be inclosed in the *capsulæ* of a flower, she pierces it with her long moveable teeth, and then gathers them at her leisure. When this little animal is thus loaded, she rubs herself to collect her materials, and rolls them up in a little mass. Sometimes she performs this part of her business by the way; sometimes she stays till she comes back to her habitation. As soon as they are formed into a ball about the size of a grain of pepper, she lodges it in her little basket, and returns with a joy proportionable to the quantity she brings. The honey of the Bees is found in the same place with the wax; and it is lodged in little reservoirs, placed at the bottom of the flowers.

MARALDI, and DE REAUMER.

Poetical description of the BEE HIVE.

WHAT various wonders may observers see
In a small insect—the sagacious Bee?
Mark how the little untaught builders square
Their rooms, and in the dark their lodgings rear!
Nature's mechanics, they unwearied strive,
And fill with curious labyrinths the hive.
See what bright strokes of architecture shine
Thro' the whole frame—what beauty, what design!
Each odoriferous cell and waxen tow'r,
The yellow pillage of the rish'd flow'r,
Has twice three sides, the only figure fit,
To which the lab'ers may their stores commit,
Without the loss of matter, or of room,
In all the wond'rous structure of the comb.
Next view, spectator, with admiring eyes,
In what just order all th' apartments rise!
So regular their equal sides cohere,
Th' adapted angles so each other bear;
That by mechanic rules refin'd and bold,
They are at once upheld, at once uphold.
Does not this skill ev'n vie with reason's reach?
Can *Euclid* more, can more *Palladio* teach?
Each verdant hill th' industrious chymists climb,
Extract the riches of the blooming thyme;
And provident of winter long before,
They stock their caves, and hoard their flow'ry
store.

In peace they rule their state with prudent care,
Wisely defend, or wage offensive war.

WEEKLY AMUSEMENT.

*The excursion of a Bee to the blossoms of an
Almond Tree: by SIR JOHN HILL.*

THE little creature first settled on the top of one of the branches, and, for a moment, seemed to enjoy the scene as I did: she just gave me time to admire her sleek silky coat, and glossy wings, before she plunged into a full-blown blossom, and buried herself among the thready honours of the centre. She wantoned and rolled herself about, as if in ecstasy, a considerable time there, and in her motions greatly disconcerted the apparatus of the flower; the ripe heads of the thready filaments all burst, and shed a subtile yellow powder over the whole surface of the leaves; nor did the creature stop its gambols, while one of them remained whole, or with any appearance of dust in its cavity.

Tired with enjoyment, as it might naturally have seemed, she now walked out, and appeared to have paid for the mischief she

had done, at the expense of strangely defiling her own downy coat. Though some of the dust from the little capsules had been spread over the surface of the flower, the far greater part of it had evidently fallen upon her own back, and been retained there among the shag of its covering.

She once more placed herself on the summit of a little twig, and soon began to clear her body of this new gathered dust. It was with great admiration that I observed the readiness with which she executed this; it was not half a minute before her whole coat was as clean and glossy as at first: and what appeared more singular was, that not a particle of the dust had fallen upon any of the flowers about her, where it must have been visible as easily as on the surface of that it was taken from.

A very laboured motion of the fore legs of the Bee soon directed my eye thither, and the whole business was then immediately explained: I found she had carefully brought together every particle that she had wiped off from her body, and formed it into a mass, which she was now moulding into a firmer tex-

ture, and which she soon after delivered to the next leg, and from that, after a little moulding more, to the hinder one, where she lodged it in a round lump in a part destined to receive it; and having thus finished her operation, took wing for the hive with her load.

It appeared therefore evidently, that what had seemed sport and pastime, was business to the insect; that its rolling itself about was with intent to dislodge this yellow dust from the little cases that contained it; and that this powder, the abundance of which it was easy to perceive could not be created for the service of the plant, was destined to furnish the Bee with wax to make its combs, and to serve us for a thousand purposes afterwards.

The return of this single insect to the hive, sent out a legion upon the same expedition. The tree was in an instant covered as thick almost with Bees as with flowers. All these employed themselves exactly as the first had done, except that some of them being reduced to enter flowers yet hardly open, in which the reservoirs of this waxy powder were not ripe for bursting, these were forced

to take a more laborious method: it was with great satisfaction that I saw them bite open successively every one of the thirty heads in the flower, and scooping out the contents, add them to the increasing ball, that was to be carried home upon the thigh.

Such, then, is the purpose of nature, in what might appear to us profusion in the abundant quantity of this powder: the Bee wants it, though the plant does not; and the pains that animal takes to get it out, never fail to answer the purpose of impregnating the fruit, a vast quantity of it being thus scattered over the organ destined to the conveying of it thither.

The making the comb is not the only purpose to which this powder serves the Bee; it is the natural food of that creature. What is lodged in the hive is eaten by the swarm; and, after it has been retained in the stomach long enough to be divested of its nutritive matter, it is disgorged in a state just ready for moulding further into real and finished wax.

Our immortal bard Shakespear beautifully

expresses himself on this subject in the following lines :

————— So work the honey Bees ;
Creatures, that, by a rule in nature, teach
The art of order to a peopled kingdom.
They have a king, and officers of sort ;
Where some, like magistrates, correct at home ;
Others, like merchants, venture trades abroad ;
Others, like soldiers, armed in their stings,
Make boot upon the summer's velvet buds,
Which pillage they with merry march bring
home
To the tent royal of their emperor,
Who, busied in his majesty, surveys
The singing mason building roofs of gold ;
The civil citizens kneading up the honey ;
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate ;
The sad-eyed justice, with his surly hum,
Delivering o'er to executors pale
The lazy yawning drone."

—————
Remarkable instance of forbearance, and subsequent punishment, of a migratory Bee.

A GENTLEMAN, in the month of September 1810, walking in his flower garden, had

his attention arrested by the following curious circumstance:—A large wild Bee, he observed to go into one of the Bee-hives, from which in less than a minute he was expelled by three of the hive Bees, who brought him out and left him. The intruder, however, made a second essay, and was again repulsed by the rightful owners of the hive; but notwithstanding the two fair warnings he had received, he returned a third time to the assault, and entered the premises. The inhabitants, as it is conceived, now thought it *high time* to punish the offender for his temerity, which they did, as four of them brought him out dead; and having laid him at the extremity of the stone on which the hive stood, returned to their habitation.

*Anecdote of Bees increasing a Curate's
Stipend.*

A FRENCH bishop, being about to make his annual visitation, sent word to a certain curate, whose ecclesiastical benefice was extremely trifling, that he meant to dine with

him, at the same time requesting that he would not put himself to any extraordinary expense. The curate promised to attend to the bishop's suggestion; but he did not keep his word, for he provided a most sumptuous entertainment. His lordship was much surprised, and could not help censuring the conduct of the curate; observing, that it was highly ridiculous in a man, whose circumstances were so narrow, to launch out in such expense, nay, almost to dissipate his annual income in a single day.—“Do not be uneasy on that score, my lord,” replied the curate; “for I assure you, that what you now see is not the produce of my curacy, which I bestow exclusively upon the poor.”—“Then you have a patrimony, sir,” said the bishop. — “No, my lord.” — “You speak in riddles,” rejoined his lordship; “how do you then contrive to live in this manner?” — “My lord, I have a convent of young damsels here, who do not let me want any thing.” — “How! *you* have a convent! I did not know there was one in this neighbourhood. This is all very strange,

very unaccountable, Mr. Curate."—"You are jocular, my lord!"—"But come, sir, I entreat that you would solve the enigma; I would fain see the convent."—"So you shall, my lord, after dinner; and I promise you that your lordship will be satisfied with my conduct."—Accordingly, when dinner was over, the curate conducted the prelate to a large enclosure, entirely occupied by Bee-hives, and pointing to the latter, observed, "This, my lord, is the convent, which gave us a dinner; it brings me in about eighteen hundred livres per annum, upon which I live very comfortably, and with which I contrive to entertain my guests genteelly."—The surprise and satisfaction of the bishop at this discovery, may be readily conceived. The sequel of the story informs us, that ever afterwards, whenever a curate made application to his lordship for an improved living, he would only energetically reply, "*Keep Bees! Keep Bees!*"

Address to a Bee.

Thou wert out betimes, thou busy busy Bee!

When abroad I took my early way,
Before the cow from her resting place
Had risen up, and left her trace

On the meadow with dew so gray,
I saw thee, thou busy busy Bee!

Thou wert alive, thou busy busy Bee!

When the crowd in their sleep were dead,
Thou wert abroad in the freshest hour,
When the sweetest odour comes from the flower.

Man will not learn to leave his lifeless bed,
And be wise and copy thee, thou busy busy Bee!

Thou wert working late, thou busy busy Bee!

After the fall of the cistus flower,
I heard thee last as I saw thee first,
When the primrose tree blossom was ready to burst,
In the coolness of the ev'ning hour,
I heard thee, thou busy busy Bee!

Thou art a miser, thou busy busy Bee!

Late and early at employ;
Still on thy golden stores intent,
Thy youth in heaping and hoarding is spent,
What thy age will never enjoy.
I will not copy thee, thou miserly Bee!

Thou art a fool, thou busy busy Bee !
 Thus for another to toil !
 Thy master waits till thy work is done,
 Till the latest flowers of the ivy are gone,
 And then he will seize the spoil,
 And will murder thee, thou poor little Bee !

ANTHOLOGY.

Description of an Apiary: by the Rev.
THOMAS MAURICE.

REFLECTED from Augusta's glittering spires,
 The sun darts fiercely his meridian fires;
 With brighter splendour shines each glistening
 stream,
 While nature pants beneath the fervid beam.
 For shelter from the sultry dog-star's heat,
 To the deep glen the fainting herd retreat;
 Listless repose beneath the gloomy brake,
 Or headlong plunge amid the cooling lake.
 Mark how intensely, while the blazing day
 Pours on their glowing hives its fiercest ray,
 Yon buzzing tribes pursue their ceaseless toil,
 Loaded with all the garden's fragrant spoil;
 Darkening the air, behold the unnumber'd throng,
 In driving swarms, harmonious glide along;
 All in strong bonds of social union join'd,
 One mighty empire, one pervading mind:

No civil discords in that empire rage,
Save when on idle drones dire war they wage;
No tyrant's thundering scourge, nor rattling chain,
Disgrace the regent mother's gentle reign;
Eternal laws to industry incite,
All, all to swell the public stores unite.
Oh! would the mighty states, whose thunders
 hurl'd
O'er ravag'd Europe, awe the astonish'd world,
Oh! would they imitate the blameless race,
Whose numerous hives their names conspicuous
 grace;
Their vigorous industry, their loyal zeal,
Their generous ardour for the public weal;
Be firmly bound by one grand social chain,
And bid through earth eternal concord reign!

BEETLES, AND FLIES.

THE BEETLE BAROMETER.

A MOST beautiful insect, called the Clock Beetle, which flies about in the summer evenings, in a circular direction, with a loud buzzing noise, is said to foretel a fine day. This insect was consecrated by the Egyptians to the Sun. The body is often coloured with a bluish or greyish gloss, sometimes brassy beneath, and the shells frequently dull.—NICHOLSON'S ENCYCLOPEDIA.

THE BOMBARDIER.

THIS is a species of those insects called *buprostis*, that is, whose wings are inclosed in a kind of case, to cover and wrap them up. It keeps itself concealed among the stones, and seems to make little use of its wings; when it moves, it is by a sort of jump; and whenever it is touched, one is surprised to hear a noise resembling the

discharge of a musket in miniature; during which a blue smoke may be seen to proceed from its anus. This insect may be made at any time to play off its little artillery by scratching its back with a needle. If we may believe Bolander, who first made these observations, it can give twenty discharges successively. A bladder placed near the anus, is the arsenal from whence it derives its store, and this is its chief defence against an enemy, although the smoke emitted seems to be altogether inoffensive, except it be by causing a fright, or concealing its course. Its chief enemy is a great carabus (another species of the *buprostis*): when pursued, and fatigued, it has recourse to this stratagem, by laying in the path of the carabus, which advances with open mouth and claws to receive it; but on the discharge of this artillery, suddenly draws back, and remains awhile confused; during which the *bombardier* conceals himself in some neighbouring crevice, and if not happy enough to find one, the carabus returns to the attack, takes the insect by the head, and tears it off.

—ANNUAL REGISTER, Vol. xv. 1772.

THE FLYING HART, *a BEETLE so called.*

IN Virginia and New England, there is a large flying beetle of a dark shining brown colour, with a huge pair of horns, in proportion to the body, shaped and branched exactly like a stag or hart's horn, from which last it hath its derivation, and is called the Flying Hart. It flies high and swift, and rests commonly upon branches or trunks of standing trees, where, as soon as it has taken up its station, it begins with a shrill chirping voice, which it raises by little and little till it makes the whole woods ring again, and then lessens gradually till it ceases with a kind of silent murmur, as if the little creature had sung itself asleep; then it flies to some other place, and begins the same tune again.

The horns are of a shining hard substance, and the tips of them touch the same plane with the belly.—PHILOSOPHICAL TRANSACTIONS:

THE BLACKSMITH FLY.

THE Blacksmith Fly, is so called from its making a noise, resembling, in sound, the striking on iron. In the centre of its back is a projecting horny point, and a crevice of the same nature on the hind part of the head, near the shoulders, which being struck together, by a jerk of the head and body, make a tingling noise, that may be heard at a considerable distance; and so elastic is the membrane which joins the head and body together, that, if the insect is laid on its back, it will spring to a tolerable height upwards, and fall directly on its legs. It differs very little from the beetle in shape or size, excepting in its elastic powers, and making so singular a noise.—
ATWOOD'S HISTORY OF DOMINICA.

THE CIMEX PARADOXUS, OR WALKING
LEAF.

DR. SPARMAN relates, that when at the Cape, he observed this insect at noon-tide as he sought for shelter among the branches of a shrub from the intolerable heat of the sun. —Though the air (says he) was extremely still and calm, so as hardly to have shaken an aspen leaf, yet I thought I saw a little withered, pale, crumpled leaf, eaten as it were by caterpillars, flitting from the tree.

This appeared to me so very extraordinary, that I thought it worth my while suddenly to quit my verdant bower, in order to contemplate it; and I could scarcely believe my eyes, when I saw a live insect, in shape and colour resembling the fragment of a withered leaf, with the edges turned up, and eaten away as it were by caterpillars, and at the same time all over beset with prickles. Nature, by this peculiar form, has certainly extremely well defended and concealed, as in a mask, this insect from birds and its other diminutive foes; in all probability with a view to preserve it, and employ it for some important office in the system of her economy, — a system with which we are too little acquainted, in general too little investigated; and which, in every part of it, we can never sufficiently admire with that respect and veneration which we owe to the great Author of Nature and ruler of the Universe.

THE CICADA, OR CHIRPING-GRASS-
HOPPER.

THIS is the insect so often commemorated by the ancient poets, and so generally confounded by the major part of translators with the Grasshopper. It is a native of the warmer parts of Europe, particularly of Greece and Italy: appears in the hotter months of summer, and continuing its shrill chirping during the greatest part of the day, generally sitting among the leaves of trees, near the ground.

The ancients differ in their opinions relative to the Cicada. Virgil speaks of them as insects of a disagreeable and stridulous tone. On the contrary, Anacreon compliments them on their musical note, and makes the Cicada a favourite of Apollo.

To the Grasshopper.

HAPPY Insect ! blithe and gay
Seated on the sunny spray,
And drunk with dew, the leaves among,
Singing sweet thy chirping song.

All the various season's treasures,
All the products of the plains,
Thus lie open to thy pleasures,
Fav'rite of the rural swains.

On thee, the Muses fix their choice,
And Phœbus adds his own,
Who first inspir'd thy lively voice,
And tun'd the pleasing tone.

Thy cheerful note in wood and vale
Fills every heart with glee ;
And summer smiles in double charms
While thus proclaim'd by thee.

Like Gods canst thou the Nectar sip,
A lively chirping elf ;
From labour free, and free from care,
A little God thyself !

MR. COWLEY has also the following pretty lines on this insect :—

HAPPY Insect ! what can be
In happiness compar'd to thee ?
Fed with nourishment divine,
The dewy morning's gentle wine !
Nature waits upon thee still,
And thy verdant cup does fill.
Thou dost drink, and dance, and sing,
Happier than the happiest king !
All the fields which thou dost see,
All the plants belong to thee,
All that summer hours produce,
Fertile made with early juice.
Man for thee does sow and plow,
Farmer he, and landlord thou !
Thou dost innocently enjoy,
Nor does thy luxury destroy :
The country hinds, with gladness hear,
Prophet of the ripen'd year !
To thee of all things upon earth,
Life's no longer than thy mirth.

Happy insect, happy, thou
Dost neither age nor winter know,
But when thou'st drunk, and danc'd and sung
Thy fill, the flowing leaves among,
Sated with thy summer feast,
Thou retirs't to endless rest.

THERE is also a very pleasing and elegant tale, related by ancient authors of two rival musicians, alternately playing for a prize; one of the candidates was so unfortunate as to break a string of his lyre, by which accident he would certainly have failed; when a Cicada, flying near, happened to settle on his lyre, and by its own note supplied the defective string, and thus enabled the favourite candidate to overcome his antagonist. So remarkable was the event, that a statue was erected to perpetuate the memory of it, on which a man is represented playing on a lyre, on which sits a Cicada (Grasshopper).

This Insect begins its song early in the morning, and continues it during the heat of the noon-tide sun. Its lively and animated music is, to the country people, a presage of a fine summer, a plentiful harvest, and the

sure return of spring. The Cicadae have a head almost triangular, and oblong body, their wings fastigated or in form of a roof, and six legs with which they walk and leap pretty briskly.—GREGORY'S DICTIONARY.
—DR. SHAW, &c.

CICINDELA, in Zoology, THE SPARKLER.

THIS is a beautiful Insect, runs with great swiftness, and flies easily. It is found in dry sandy places, especially in the beginning of Spring. It makes a perpendicular round hole in the ground, and keeps its head at the entrance of the hole to catch the insects that fall into it: a spot of ground is sometimes entirely perforated in this manner. These insects are in general very beautiful, and merit the attention of the curious in their microscopic observations; some are minute, though not inferior in splendour, and therefore best suited for the experiment. Living subjects are ever preferable to dead ones. The Larvæ of this Insect, live under-

ground; and are as well as the perfect insects, tigers in their nature, attacking and destroying all they can overcome.

DR. GREGORY.

CRICKET—*The Domestic one.*

THIS is an harmless, inoffensive, and familiar little insect. It is an inhabitant of almost every house, and is found particularly about ovens and kitchen chimneys: It wanders about during the whole night, keeping up a continual chirping especially, before rain. It is said to forsake houses infested with the cock-roach.

The poet COWPER gives the following very pleasing description of this little insect:

1

Little inmate, full of mirth,
Chirping on my kitchen hearth;
Wheresoe'er be thine abode,
Always harbinger of good.

Pay me for thy warm retreat
With a song more soft and sweet ;
In return thou shalt receive
Such a strain as I can give.

2

Thus thy praise shall be exprest,
Inoffensive, welcome guest !
While the rat is on the scout,
And the mouse with curious snout,
With what vermin else infest
Every dish, and spoil the best ;
Frisking thus before the fire,
Thou hast all thine heart's desire.

3

Though in voice and shape they be
Formed as if akin to thee,
Thou surpassesest, happier far,
Happiest Grasshoppers that are ;
Their's is but a Summer's song
Thine endures the Winter long,
Unimpair'd, and shrill, and clear,
Melody throughout the year.

4

Neither night, nor dawn of day,
Puts a period to thy play :
Sing then—and extend thy span
Far beyond the date of man.

Wretched man, whose years are spent,
In repining discontent,
Lives not, aged though he be,
Half a span, compared with thee.

CAMEL CRICKET, OR PRAYING MANTIS.

THE name Mantis, given to this insect, denotes Soothsayer; because it has been imagined, that by stretching out its fore-feet, it divined and pointed out those things that were asked of it. This insect, which is a stranger to the British isles, is found in most of the warmer parts of Europe, and is entirely of a beautiful green colour. It is nearly three inches in length, of a slender shape, and in its general sitting posture is observed to hold up the two fore legs slightly bent, as if in an attitude of prayer; for this reason the superstition of the vulgar has confirmed upon it the reputation of a sacred animal; and a popular notion has often prevailed, that a child or traveller having lost his way, would be safely directed by observing the quarter to which the animal pointed

when taken into the hand. In its real disposition it is very far from sanctity; preying with great rapacity on any of the smaller insects which fall in its way, and for which it lies in wait with anxious assiduity, in the posture at first mentioned, seizing them with a sudden spring when within its reach, and devouring them. It is also of a very pugnacious nature; and when kept with others of its own species, in a state of captivity, will attack its neighbour with the utmost violence, till one or the other is destroyed in the contest. Roësel, who kept some of these insects, observes, that in their natural conflicts, their manœuvres very much resemble those of hussars fighting with sabres; and sometimes one cleaves the other through at a single stroke, or severs the head from the body. During these engagements the wings are generally expanded, and when the battle is over, the conqueror devours his antagonist.

Among the Chinese, this quarrelsome property in the Mantis, is turned into a similar entertainment with that afforded by fighting cocks and quails: (for to this insect, or one closely allied to it, it is supposed that the

following passage in Mr. Barrow's account of China alludes). " They have even extended their inquiries after fighting animals into the insect tribe, and have discovered a species of *Gryllus*, or Locust, that will attack each other with such ferocity as seldom to quit their hold, without bringing away at the same time a limb of their antagonist. These little creatures are fed and kept apart in bamboo cages, and the custom of making them devour each other is so common, that during the summer months, scarcely a boy is to be seen without his cage of Grasshoppers."

The Mantis *Precaria*, is a native of many parts of Africa, and is the supposed idol of the Hottentots, which those superstitious people are reported to hold in the highest veneration, the person on whom the adored insect happens to light being considered as favoured by the distinction of a celestial visitant, and regarded ever after, in the light of a Saint.—BARROW, SHAW, and GREGORY.

CANCER RURICOLA, OR LAND CRAB.

THE Crabs of this species, inhabit the Bahama islands, as well as most lands between the Tropics. These animals live not only in a kind of orderly society, in the retreats in the mountains; but regularly once a year, march down to the sea-side in a body of some millions at a time. As they multiply in great numbers, they choose the month of April or May, to begin their expedition; and then sally out by thousands from the stumps of hollow trees, from the cliffs of rocks, and from the holes which they dig for themselves under the surface of the earth. At that time the whole ground is covered with this band of adventurers; there is no setting down one's foot, without treading upon them. The sea is their place of destination, and to that they direct their march with right-lined precision. No geometrician could send them to their destined station by a shorter course; they neither turn to the right nor left, whatever obstacles intervene;

and even if they meet with a house, they will attempt to scale the walls to keep the unbroken tenor of their way. But though this is the general order of their rout, they upon other occasions, are obliged to conform to the face of the country; and if it is intersected with rivers, they are then seen to wind along the course of the stream. They are often obliged to halt for want of rain, and go into the most convenient encampment till the weather changes. The main body of the army is composed of females, which never leave the mountains till the rain is set in for some time. The night is their chief time of proceeding; but if it rains by day, they do not fail to profit by the occasion; and they continue to move forward in their slow uniform manner. When the sun shines, and is hot upon the surface of the ground, they make a universal halt, and wait till the cool of the evening. When they are terrified, they march back, in a confused disorderly manner, holding up their nippers, with which they sometimes tear off a piece of the skin, and then leave the weapon where they inflicted the wound. They even try to inti-

midate their enemies ; for they often clatter their nippers together, as if to threaten those that disturb them. But though they thus strive to be formidable to man, they are much more so to each other ; for they are possessed of one most unsocial property, which is, that if any of them by accident be maimed, in such a manner as to be incapable of proceeding, the rest fall upon and devour it on the spot, and then pursue their journey. When, after a fatiguing march, and escaping a thousand dangers (for they are sometimes three months in getting to the shore), they have arrived at the destined port, they prepare to cast their spawn, which, shaking off into the water, they leave accident to bring it to maturity. At this time shoals of hungry fish are at the shore in expectation of this annual supply : the sea to a great distance seems black with them ; and about two-thirds of the Crab's eggs are immediately devoured by these rapacious invaders. The eggs that escape are hatched under the sand ; and, soon after, millions at a time of these little Crabs are seen quitting the shore, and slowly travelling up to the mountains. This

animal, when possessed of its retreats in the mountains, is impregnable; for, only subsisting on vegetables, it seldom ventures out, and its habitation being in the most inaccessible places, it remains for a great part of the season, in perfect security. It is only when impelled by the desire of bringing forth its young, and when compelled to descend into the flat country, that it is taken. At that time, the natives wait for its descent in eager expectation, and destroy thousands; but, disregarding their bodies, they only seek for that small spawn which lies on each side of the stomach, within the shell, of about the thickness of a man's thumb. They are much more valuable upon their return after they have cast their shell; for being covered with a skin resembling soft parchment, almost every part except the stomach may be eaten. They are taken in the holes, by feeling for them with an instrument; they are sought after by night, when on their journey, by flambeaux. The instant the animal perceives itself attacked, it throws itself on its back, and with its claws pinches most terribly whatever it happens to fasten on. But the

dexterous crab-catcher takes them by the hinder legs, in such a manner that the nippers cannot touch him, and thus he throws them into his bag. Sometimes also they are caught when they take refuge in the bottoms of holes in rocks by the sea side, by covering the mouth of the hole, to prevent their getting out; and then, soon after, the tide coming, enters the hole, and the animal is found upon its ebbing, drowned in its retreat. These Crabs are of various sizes, the largest about six inches wide; they walk side-ways, like the Sea-crab, and are shaped like them; some are black, some yellow, some red, and others variegated with red, white, and yellow mixed.

The light-coloured are reckoned best, and when in full flesh, are very well tasted.

PHILOSOPHICAL TRANSACTIONS.

THE COCHINEAL INSECT.—*Coccus Cacti*.

THIS insect is celebrated for the beauty of the colour which it yields, when properly prepared. It is a native of South America, and is peculiarly cultivated in the country of Mexico, where it feeds on the plants called *cactus cochenillifer*, and *cactus opuntia*. The female Cochineal insect, in its full-grown, pregnant, or torpid state, swells or grows to such a size, in proportion to that of its first, or creeping state, that the legs, antennæ, and proboscis are so small, with

respect to the rest of the animal, as hardly to be discovered except by a good eye, or by the assistance of a glass; so that on a general view it bears as great a resemblance to a seed or berry as to an animal. This was the cause of that difference in opinion, which long subsisted between several authors; some maintaining that Cochineal was a berry, while others contended that it was an insect. We must also here advert to another error, viz. that the cochineal was a species of *coccinella* or lady-bird. This seems to have taken its rise from specimens of the *coccinella cacti* of Linnæus, being sometimes accidentally intermixed with the Cochineal in gathering and drying.

When the female Cochineal insect is arrived at its full size, it fixes itself to the surface of the leaf, and envelops itself in a white cottony matter, which it is supposed to spin or draw through its proboscis in a continued double filament, it being observed that two filaments are frequently seen proceeding from the tip of the proboscis in the full-grown insects.

The male is a small and rather slender

fly, about the size of a flea, with jointed antennæ and large white wings in proportion to the body, which is of a red colour, with two long filaments proceeding from the tail. It is an active and lively animal, and is dispersed in small numbers among the females, in the proportion (according to Mr. Ellis, in the Philosophical Transactions), of about one male to a hundred and fifty, or even two hundred females. When the female insect has discharged all its eggs, it becomes a mere husk, and dies; so that great care is taken to kill the insects before that time, to prevent the young from escaping, and thus disappointing the proprietor of the beautiful colour. The insects when picked or brushed off the plants, are said to be first killed either by the fumes of heated vinegar, or by smoke, and then dried, in which state they are imported into Europe: and it is said, that the Spanish government is annually more enriched by the profit of the Cochineal trade, than by the produce of all its gold mines.

It may perhaps be almost unnecessary to add, that exclusive of the general, or large

scale, in which Cochineal is used by the dyers, the fine colour, so much esteemed in painting, and known by the name of carmine, is no other than a preparation from the same substance, and is unquestionably the most beautiful of all the pictorial reds. It is also used, when properly mixed, with hair powder, powdered talc, and in that cosmetic, so much used by the ladies, and properly known by the French term, *rouge*.
—GALLERY OF NATURE AND ART.

CUCKOO-SPIT.

THE Cuckoo-Spit insect is so named from the circumstance of its producing, during its immature state, the white froth so common on various plants in the summer season, and popularly known by the name of Cuckoo-spittle. During this, its immature state, the animal continues to suck with its proboscis the juice of the plant on which it resides, discharging it at intervals from the hind part of its body, in the form of very minute glutinous bubbles, and by con-

tinuing this operation, completely covers itself under a large mass of white froth. When arrived at its full growth, it measures about the fifth of an inch in length, and is of a beautiful pale green colour; it now casts its skin, and appears in its perfect state, when the wings (of which the rudiments only were apparent before) are very conspicuous: the whole insect is now of a pale brown colour, with a pair of pale or whitish bands across the wings. In this state it is often called by the name of the frog-hopper, from a fancied resemblance to the shape of that animal in miniature. These insects breed in the month of September, and deposit their eggs towards the beginning of October, which, however, do not hatch till the following spring.

DR. SHAW.

CULEX.—THE GNAT.

THESE insects too well known by the several punctures they inflict, and the itchings from thence arising, afford a most inte-

resting history. Before they turn to flying insects, they have been in some measure fishes under two different forms. From the beginning of May, till winter, small grubs may be seen with their heads downward, and their hinder parts on the surface of the water, from which part arises sideways, a kind of vent-hole, or small hollow tube, like a funnel, and this is the organ of respiration. The head is armed with hooks, that serve to seize on insects, and bits of grass, on which it feeds. On the sides are placed four small fins, by the help of which the insect swims about, and dives to the bottom. These larvæ retain their form during a fortnight or three weeks, after which period they turn to chrysalids. All the parts of the winged insect are distinguishable through the outward robe that shrouds them. The chrysalids are rolled up into spirals. The situation and shape of the windpipe is then altered; it consists of two tubes near the head, which occupy the place of the stigmata, through which the winged insect is one day to breathe.

These chrysalids constantly on the sur-

face of the water, in order to draw breath, abstain now from eating, but upon the least motion, are seen to unroll themselves and plunge to the bottom, by means of little paddles situated at their hinder part. After three or four days of strict fasting, they pass to the state of Gnats. A moment before, water was the element of the little creature, but now become a winged insect, he can no longer subsist in it. He swells his head, and bursts his enclosure. The robe he lately wore, turns to a ship, of which the insect is the mast and sail. If at the instant when the Gnat displays his wings, there arises a breeze, it proves to him a dreadful hurricane: the water gets into the ship, and the insect, who is not yet loosened from it, sinks and is lost. But in calm weather the Gnat forsakes his slough, dries himself, flies into the air, and seeks to pump the alimentary juice of leaves, or the blood of men and beasts. It is impossible to behold, and not to admire, the amazing structure of its sting: what the naked eye discovers, is but a tube containing five or six spiculæ of exquisite minuteness, some den-

tated at their extremity, like the head of an arrow, and sharp-edged like razors. These spicula introduced into the veins, act as pump-suckers, into which the blood ascends, by reason of the smallness of the capillary tubes. The insect injects a small quantity of liquor into the wound, by which the blood becomes more fluid, and is seen through the microscope passing through these spicula. The animal swells, grows red, and does not quit its hold, till it has gorged itself. The liquor it has injected, causes, by its irritation, that disagreeable itching which we experience; and which may be removed by volatile alkali, or by scratching the part newly stung, and washing it with vinegar. At night to rub with fuller's earth and water, lessens the pain and inflammation.

The female deposits her eggs in the water, placing them in the form of a little boat. This vessel, composed of two or three hundred eggs, swims on the water for two or three days, after which they are hatched. If a storm arises, the boats are sunk. Every month there is a fresh progeny of these insects. Were they not devoured by swal-

lows, other birds, fish, and several carnivorous insects, the air would be darkened by them.—DR. GREGORY.

The little Gnat, in beauties, may compare,
With all the rival brothers of the air;
Transparent feathers, purple, green, and gold,
His wings, small feet, and fringed tail enfold;
Four sharpen'd spears, his head with weapons
arm,
And his pearl'd eyes, with liveliest graces charm.
BROWNE.

CHRYSID—GOLD FLY.

THE mouth of this insect is armed with jaws, but has no proboscis; the wings lie plain, and the body appears as if gilt, and the extremity armed with a sting. It is beautified with the most splendid colours. The fore part of the head is green and gold, and the hinder of a bright azure. The thorax is azure and green: the abdomen is green and gold before, and of a coppery red behind. This insect inhabits the holes of decayed walls.—DR. GREGORY.

THE DEATH WATCH.—*Ptinus Fatidicus*.

THIS celebrated insect is distinguished by the title of Death Watch, or *Ptinus Fatidicus*. Among the popular superstitions, the dread of the Death Watch is still predominant, and continues to disturb the habitations of rural tranquillity with groundless fears, and absurd apprehensions. It is not indeed to be imagined, that they who are engaged in the more important cares of providing the immediate necessities of life, should have either leisure or inclination to investigate with philosophic exactness the cause of a particular sound; yet it must be allowed to be a very singular circumstance, that an animal so common should not be more universally known, and the peculiar noise which it makes be more universally understood. It is chiefly in the advanced state of spring, that this alarming little animal commences its sound, which is no other than the call or signal by which the male and female are led to each other, and which may be considered as analogous to the

call of birds: though not owing to the voice of the insect, but to its beating on any hard substance with the shield, or fore part of its head. The prevailing number of distinct strokes which it beats, is from seven to nine, or eleven; which very circumstance may perhaps add, in some degree, to the curious character which it bears among the vulgar. These sounds or beats are given in pretty quick succession, and are repeated at uncertain intervals; and in old houses where the insects are numerous, may be heard at almost every hour of the day; especially if the weather be warm. The sound exactly resembles that which may be made by beating moderately hard with a nail on a table. The insect is of a colour so nearly resembling that of decayed wood, viz. an obscure greyish brown, that it may for a considerable time elude the search of the inquirer. It is about a quarter of an inch in length, and is moderately thick in proportion, and the wing shells are marked with numerous irregular variegations of a lighter or greyer cast than the ground colour. Ridiculous, and even incredible as it may appear, it is

an animal that may in some measure be tamed; at least it may be so far familiarised as to be made to beat occasionally, by taking it out of its confinement, and beating on a table or board, when it will readily answer the noise, and will continue to beat as often as required. Dr. Derham had two Death-watches, a male and a female, which he kept alive in a box for several months; and could bring one of them to beat whenever he pleased by imitating its beating.

We must be careful not to confound this animal, which is the real Death-watch, of the vulgar emphatically so called, with a much smaller insect, of a very different genus, which makes a sound like the ticking of a watch, and continues it for a long time without intermission. It belongs to a totally different order, and is the *Termes Pulsatorium* of Linnaeus.—NATURALIST'S MISCELLANY.

EARWIG.—FORFICULA.

THE *Forficula Auricularia*, or common Earwig, is an insect so familiarly known, that a formal description might seem unne-

cessary ; its structure however is highly curious, and its natural history well worthy of particular observation. The wings of this insect are remarkably elegant, and are convoluted beneath their small sheaths in so curious a manner, that they cannot be viewed without admiration : they are very large in proportion to the animal, transparent, and slightly iridescent. The Earwig flies only by night, and it is not without great difficulty that it can be made to expand its wings by day : it is even probable that they would receive injury by any long exposure to the diurnal air ; the animal therefore keeps them completely covered.

The usual food of the Earwig consists of decayed fruits and other vegetable substances : and it does not seem to be naturally carnivorous ; though, if kept without proper nourishment, it will, like many other animals, occasionally attack, and devour even its own species.

The popular dread in which this insect is held, on a supposition of its sometimes entering the cavity of the ear, and piercing the tympanum, is considered by some as

problematical, though we believe there are instances of Earwigs, which naturally creep into holes and apertures of every kind, having accidentally taken shelter in the cars of persons asleep, and occasioning great pain. The best means of expelling them under such circumstances is, by dropping a small quantity of brandy or other spirits into the ear, or a little sweet oil is preferable, and an apple cut and applied to the ear offended, will also have the same effect.

DR. GREGORY, &c.

EPHEMERA, DAY FLY, OR MAY FLY.

THESE flies take their name of May-fly, from the shortness of their life, and are distinguished into several species. Some live several days; others do not take flight till the setting of the sun, and live not to the rising of that luminary. Some exist but one hour, others but half that time; in which short period they comply with all the calls of nature.

The following speech, supposed to be

delivered by an ancient Ephemera, to a surrounding multitude of his fellow-insects, is from the pen of the celebrated Dr. Benjamin Franklin:—

“ My Brethren ;—It was the opinion of learned philosophers of our race, who lived and flourished long before my time, that this vast world, the *Moulin Joli*, could not itself subsist more than eighteen hours ; and I think there was some foundation for that opinion ; since by the apparent motion of the great luminary, that gives life to all nature, and which, in my time, has evidently declined considerably towards the ocean at the end of the earth, it must then finish its course, be extinguished in the waters that surround us, and leave the world in cold and darkness, necessarily producing universal death and destruction. I have lived seven of those hours ; *a great age*, being no less than four hundred and twenty minutes of time. How very few of us continue so long ! I have seen generations born, flourish, and expire. My present friends are the children, and grandchildren of the friends of my youth, who are now,

alas! no more. And I must soon follow them; for by the course of nature, though still in health, I cannot expect to live above seven or eight minutes longer: what now avails all my toil and labour, in amassing honey-dew on this leaf, which I cannot live to enjoy! What the political struggles I have been engaged in for the good of my compatriot inhabitants of this bush, or my philosophical studies for the benefit of our race in general! for in politics (what can laws do without morals?), our present race of Ephemera will, in a course of minutes, become corrupt, like those of other and older bushes, and consequently as wretched; and in philosophy how small our progress! Alas! art is long, and life is short! My friends would comfort me with the idea of a name, they say I shall leave behind me, and they tell me I have lived long enough to nature and to glory. But what will fame be to an Ephemera who no longer exists? And what will become of all history in the eighteenth hour, when the world itself, even the whole *Moulin Joli*, shall come to its end, and be buried in an universal ruin?"

FILARIA.

THIS very remarkable insect inhabits the Indies, and is frequent in the morning dew, whence it enters the naked feet of the slaves, and creates the most troublesome itchings, accompanied with inflammation and fever. It must be cautiously drawn out, by means of a piece of silk tied round its head, for if the animal should break, the remaining part grows with redoubled vigour, and is often fatal. In size it is of great length, and not thicker than a horse-hair.

FIRE-FLY.—*FULGORA*.[*LANTERN-FLY of the East-Indies.*]

THESE flies are common in Guiana, of which there are two species. The largest is more than an inch in length, having a very large head, connected with the body by a joint of a particular structure, with which sometimes it makes a loud knock, particularly when laid on its back. The fly has two feelers, or horns, two wings and six legs. Under its belly is a circular patch, which in the dark shines like a candle; and on each side of the head, near the eyes, is a promi-

nent globular, luminous body, in size about one third larger than a mustard-seed. Each of these bodies is like a living star, emitting a bright, and not small light: since two or three of these animals, put into a glass vessel, afford a light sufficient to read without difficulty, if placed close to the book. When the fly is dead, these bodies will still afford considerable light, though it is less vivid than before; and if bruised and rubbed over the hands or face, they become luminous in the dark, like a board smeared over with English phosphorus. They are of a reddish brown or chesnut colour; and live in rotten trees in the day, but are always abroad in the night.

The other kind is not more than half as large as the former: their light proceeds from under their wings, and is seen only when they are elevated, like sparks of fire appearing or disappearing at every second. Of these the air is full in the night, though they are never seen in the day. They are common not only in the southern, but in the northern parts of America, during summer.

The *Fulgora Lanternaria*, or Peruvian

Lantern Fly, is undoubtedly one of the most curious of insects. It is of a very considerable size, measuring nearly three inches and a half from wing's end to wing's end, when expanded. The body is of a lengthened oval shape, and divided into several rings or segments; the head is nearly equal to the length of the rest of the animal, and is oval, inflated, and bent slightly upwards: the ground colour is an elegant yellow, with a strong tinge of green in some parts, and marked with numerous bright red-brown variegations in the form of stripes and spots; the wings are very large, of a yellow colour, most elegantly varied with brown undulations and spots, and the lower pair are decorated with a very large eye-shaped spot on the middle of each, the iris or border of the spot being red, and the centre half red, and half semi-transparent white. The head, or lantern, is pale yellow, with longitudinal red stripes. This beautiful insect is a native of Surinam, and many other parts of South America, and during the night diffuses so strong a phosphoric splendour from its head or lantern, that it may be employed for the

purpose of a candle or torch ; and it is said, that three or four of the insects, tied to the top of a stick, are frequently used by travellers for that purpose. The celebrated Madame Merian, in her work on the insects of Surinam, gives a very agreeable account of the surprise into which she was thrown by the first view of the flashes of light proceeding from these insects. “ The Indians once brought me,” says she, “ before I knew that they shone by night, a number of these Lantern Flies, which I shut up in a large wooden box. In the night they made such a noise, that I awoke in a fright, and ordered a light to be brought, not knowing from whence the noise proceeded. As we found that it came from the box, we opened it, but were still much more alarmed, and let it fall to the ground in a fright, at seeing a flame of fire come out of it ; and as many animals as came out, so many flames of fire appeared. When we found this to be the case, we recovered from our fright, and again collected the insects, highly admiring their splendid appearance.”

GREGORY, SHAW, and ATWOOD.

The following beautiful little ballad, by Mr. Moore, the elegant translator of Anacreon, &c. is so interesting, and descriptive of this highly decorated fly, that we cannot resist inserting the same.

The story is supposed to be the exclamation of a maniac, upon the death of a lady to whom he paid his addresses, and whose loss deprived him of his senses. The scene is the Lake of the Dismal Swamp, which contains about two hundred and fifty square miles, between Alexandria and Virginia.

“ They made her a grave too cold and damp
For a soul so warm and true ;
And she's gone to the *Lake of the Dismal Swamp*,
Where all night long, by a Fire-fly lamp,
She paddles her white canoe.

And her Fire-fly lamp I soon shall see,
And her paddle I soon shall hear ;
Long and loving our life shall be—
And I'll hide the maid in a cypress tree,
When the footstep of Death is near.

Away to the Dismal Swamp he speeds,—
His path was rugged and sore,
Thro' tangled juniper beds of reeds,
Through many a fen where the serpent feeds,
And man ne'er trod before.

And when on the earth he sunk to sleep,
 If sleep his eyelids knew ;
He lay where the deadly vines do weep
Their venomous tears—and nightly steep
 The flesh with blistering dew.

And near him the sea-wolf stirr'd the brake,
 And the rattle-snake breath'd in his ear ;
Till he starting cried—from his dream awake,
O when shall I see the dusky Lake,
 And the white canoe of my dear ?

He saw the Lake ; and a meteor bright
 Quick o'er the surface play'd.
' Welcome,' he said, ' my dear one's light !'
And the dim shore echoed for many a night,
 The name of the death-cold maid !

Till he form'd a boat of the birchen-bark,
 Which carried him off from the shore ;
Far he followed the meteor spark :
The winds were high, and the clouds were dark,
 And the boat return'd no more !

But oft from the Indian-hunter's camp
 This lover and maid so true ;
Are seen by the hour of midnight damp
To cross the Lake by a Fire-fly lamp,
 And paddle their white canoe."

FLEA.—*PULEX*.

AMONG the chief singularities observable in the structure of the Flea, may be noticed the extraordinary situation of the first pair of legs, which instead of being placed beneath the thorax, as in most other insects, are situated immediately beneath the head; the antennæ are short, hairy, and consist of five joints; and at a small distance beneath, there is placed the proboscis, which is strong, sharp-pointed, tubular, and placed between a pair of jointed guards, or sheaths, which are still farther strengthened at the base by a pair of pointed scales; the eyes are large, round, and black. The general appearance of this animal is too well known to require particular description: it may only be necessary to observe, that the male is considerably smaller than the female, with the back rather sinking than convex, as it always is in the female insect. Nothing can exceed the curious disposition and polished elegance of the shelly armour with which the animal

is covered, nor can the structure of the legs be contemplated without admiration.

GREGORY.

Astonishing strength of the Common FLEA.

NOTWITHSTANDING the general disapprobation of this insect, it has certainly something very pleasing in its appearance. When examined with a microscope, it will be observed to have a small head, large eyes, and two short four jointed antennæ, between which is the trunk or proboscis. The body appears enveloped in a shelly armour, that is always clean and bright. This is beset at the segments with many sharp bristles. All motions indicate agility and elegance; and its muscular power is so extraordinary as justly to excite our wonder. We know no other animal whatever whose muscular strength can be put in competition with that of a Flea; for, on a moderate computation it is known to leap to a distance of at least two hundred times its own length.

There is no kind of proportion between

the force and size of all the insect tribe. Had man an equal degree of strength, bulk for bulk, with a Louse or Flea, the history of Samson, would be no longer miraculous. A Flea will drag after it a chain a hundred times heavier than itself; and to compensate for this force, will eat ten times its own weight of provisions in a day.

Mr. Boverick, an ingenious watchmaker, who some years ago lived in the Strand, London, exhibited to the public, a little ivory chaise, with four wheels, and all its proper apparatus, and a man sitting on the box, all of which were drawn by a single Flea. He made a small Landau, which opened and shut by springs, with six horses harnessed to it, a coachman sitting on the box, and a dog between his legs: four persons were in the carriage, two footmen behind it, and a postillion riding on one of the fore horses, which was also easily drawn along by a Flea. He likewise had a chain of brass, about two inches long, containing two hundred links, with a hook at one end, and a padlock and key at the other, which the Flea drew very nimbly a long.

*A FLEA with a Gold Chain, exhibited before
QUEEN ELIZABETH.*

IN the year 1578, and the 20th of Queen Elizabeth, Mark Scaliot, a blacksmith, made a lock consisting of eleven pieces of iron, steel, and brass, with a hollow key to it, that altogether weighed but one grain of gold. He likewise made a gold chain, composed of forty three links, which he fastened to the lock and key, and having put it about the neck of a Flea, that little creature drew them with all ease; which being done in her Majesty's presence, he put the lock and key, Flea and chain, into a pair of scales, and they altogether weighed but one grain and a half.

*On the Duration of the Life of a FLEA,
by BORRICHIOUS. From the ACTS OF
COPENHAGEN.*

PLINY represents to us a Greek philosopher, whose chief occupation, for several years together was, to measure the space

skipped over by Fleas. Without giving into such ridiculous researches, I can relate an anecdote, which chance discovered to me in regard to this insect.

“ Being sent for to attend a foreign lady, who was greatly afflicted with the gout, and having staid, by her desire, to dine with her, she bade me take notice of a Flea on her hand. Surprised at such discourse, I looked at the hand, and saw indeed a plump and pampered Flea, sucking greedily, and kept fast to it by a little gold chain. The lady assured me, she had nursed, and kept the little animal, at that time, full six years, with exceeding great care, having fed it twice every day with her blood; and when it had satisfied its appetite, she put it up in a little box, lined with silk. In a month’s time, being recovered from her illness, she set out from Copenhagen with her Flea; but having returned in about a year after, I took an opportunity of waiting upon her, and among other things, asked after her little insect. She answered me with great concern, that it died through the neglect of her waiting-woman.”—What I found remarkable in this

story was, that the lady being attacked by chronical pains in the limbs, had recourse in France to very powerful medicines during six weeks; and all this time the Flea had not ceased to feed upon her blood, imbued with the vapours, and yet was not the worse for it.

FLY.—*MUSCA.*

OBSERVE the head (says a celebrated writer) of a common Fly, in a magnifying glass; one can never be satiated with seeing such a profusion of gold and pearls on a head so inconsiderable, and comparing it with a secret compassion with some other heads, that affect the like ornaments, without being able to imitate them. What has been said of the lilies of the field, is applicable to Ichneumon Flies, and a variety of other species:—*Solomon, in all his glory, was not arrayed like the meanest among them.*

St. Pierre tells us, that in a Fly with six, feet (the name is not mentioned), the pair next

the head, and the pair next the tail, have brushes at their extremities, with which the Fly dresses, as there may be occasion, the anterior or the posterior part of its body ; but that the middle pair have no such brushes, the situation of these legs not admitting of the brushes, if they were there, of being converted to the same use. This is a very exact mechanical distinction.—PALEY'S THEOLOGY.

Address to a FLY.

PRYTHEE, little buzzing fly,
Eddying round my taper, why?
Is it that its quiv'ring light,
Dazzling captivates your sight?
Bright my taper is, 'tis true ;
Trust me, 'tis too bright for you.
'Tis a flame, fond thing, beware,
'Tis a flame you cannot bear.

Touch it, and 'tis instant fate ;
Take my counsel ere too late :
Buz no longer round and round ;
Settle on the wall or ground :
Sleep till morning ; with the day
Rise, and use your wings, you may ;
Use them then, of danger clear ;
Wait till morning ; do my dear.

Lo! my counsel nought avails ;
Round, and round, and round it sails ;
Sails with idle unconcern,
Prithee trifler, canst thou burn?
Madly heedless as thou art,
Know thy danger, and depart.
Why persist?—I plead in vain :
Sing'd it falls, and writhes in pain.

Is not this, deny—who can ?
Is not this a draught of man ?
Like the fly, he rashly tries,
Pleasure's burning sphere, and dies.
Vain the friendly caution still !
He rebels, alas ! and will.
What I sing, let pride apply :
Flies are weak, and Man's a Fly.

ANONYMOUS.

Another Address to a FLY.

Busy, curious, thirsty Fly,
Drink with me, and drink as I !
Freely welcome to my cup,
Could'st thou sip, and sip it up.
Make the most of life you may,
Life is short and wears away.
Both alike are mine and thine,
Hast'ning quick to their decline :

Thine's a summer, mine's no more
Though repeated to threescore ;
Threescore summers, when they are gone,
Will appear as short as one.

MISS AIKEN'S COLLECTION.

FURIA.

THIS insect is well known in the northern provinces of Sweden. It is not unfrequently that people are seized with a pungent pain, confined to a point, in the hand or other exposed part of the body, which presently increases to a most excruciating degree, and even sometimes prove suddenly fatal. This disorder is caused by the insect dropping out of the air, and in a moment burying itself in the flesh, is relieved by a poultice of curds or cheese.

GLOW-WORM.—*LAMPYRIS NOCTILUCA.*

THE *Lampyrus Noctiluca*, or Glow-worm, is a highly curious and interesting animal. It is seen during the summer months, as late as the close of August, if the season be mild, on dry banks, about woods, pastures, and hedge-ways, exhibiting as soon as the evening commences, the most vivid and beautiful phosphoric splendour, in form of a round spot of considerable size. The animal itself, which is the female insect, measures about three quarters of an inch in length, and is of a dull earthy brown colour on the upper parts, and beneath more or less tinged with rose colour; with the two or three last joints of the body of a pale, or whitish sulphur-colour. It is from these parts that the phosphoric light above-mentioned proceeds, which is of a yellow colour, with a very slight cast of green; the body, exclusive of the thorax, consists of ten joints or divisions. The Glow-worm is a slow moving insect, and in its manner of walking seems to

drag itself on by starts, or slight efforts as it were. The male is smaller than the female, and is provided both with wings and wing-sheaths: it is but rarely seen; and it seems, even at present, not very clearly determined whether it be luminous or not. The general idea among naturalists has been that it is not, and that the splendour exhibited by the female in this species, is ordained for the purpose of attracting the male.

In Italy the flying Glow-worm is extremely plentiful; and we are informed by Dr. Smith, and other travellers, that it is a very common practice for ladies to stick them by way of ornament in different parts of their head-dress, during the evening hours.

The common or wing-less Glow-worm may be very successfully kept, if properly supplied with moist turf, grass, moss, &c. for a considerable length of time; and as soon as the evening commences, will regularly exhibit its beautiful effulgence, illuminating every object within a small space around it; and sometimes the light is so vivid, as to be perceived through the box in which it is kept. This insect deposits its

eggs, which are small and yellowish, on the leaves of grass, &c.—DR. GREGORY, &c. &c.

THE following addresses to this curious and interesting little insect, by several of our admired British poets are so beautifully descriptive, that we trust our readers will be gratified by their insertion:—

The GLOW-WORM:

BY WILLIAM COWPER, ESQ.

1

BENEATH the hedge, or near the stream,
A worm is known to stray;
That shows by night a lucid beam,
Which disappears by day.

2

Disputes have been, and still prevail,
From whence his rays proceed:
Some give that honour to his tail,
And others to his head.

3

But this is sure—the hand of might,
That kindles up the skies ;
Gives *him* a modicum of light,
Proportioned to his size.

4

Perhaps indulgent Nature meant,
By such a lamp bestowed,
To bid the traveller as he went,
Be careful where he trod.

5

Nor crush a worm, whose useful light
Might serve, however small,
To show a stumbling stone by night,
And save him from a fall.

6

Whate'er she meant, this truth divine
Is legible and plain ;
'Tis power Almighty bids him shine,
Nor bids him shine in vain.

7

Ye proud and wealthy, let this theme,
Teach humbler thoughts to you ;
Since such a reptile has its gem,
And boasts its splendour too.

*To the GLOW-WORM :*BY *PETER PINDAR, (DR. WOLCOT.)*

BRIGHT stranger, welcome to my field,
Here feed in safety, here thy radiance yield,
 To me, O nightly be thy splendour given !
O could a wish of mine the skies command,
How would I gem thy leaf with lib'ral hand,
 With ev'ry sweetest dew of Heaven.

Say, dost thou kindly light the fairy train
Amid the gambols on the stilly plain,
 Hanging thy lamp upon the moisten'd blade !
What lamp so fit, so pure as thine
Amid the gentle Elfin band to shine,
 And chase the horrors of the midnight shade ?

Oh ! may no feathered foe disturb thy bow'r,
And with barbarian beak thy life devour !
 Oh ! may no ruthless torrent of the sky,
O'erwhelming force thee from thy dewy seat ;
Nor tempest tear thee from thy green retreat,
 And bid thee, mid the humming myriads, die.

Queen of the insect world, what leaves delight ?
Of such these willing hands a bower shall form,
To guard thee from the rushing rains of night,
And hide thee from the wild wing of the storm.

Sweet child of stillness, mid the awful calm
Of pausing Nature thou art pleased to dwell,
In happy silence to enjoy thy balm,
And shed through life a lustre round thy cell.

How diff'rent man, the imp of noise and strife,
Who courts the storm that tears and darkens life !
Blest when the passions wild the soul invade !
How nobler far to bid those whirlwinds cease,
To taste, like thee, the luxury of peace,
And shine in solitude and shade !

To the GLOW-WORM:

BY MRS. OPIE.

GEM of the lone and silent vale,
Treasure of evening's pensive hour !
I come thy fairy rays to hail,
I come a votive strain to pour.

Nor chilly damps, nor paths untrod,
Shall from thy shrine my footstep fright ;
Thy lamp shall guide me o'er the sod,
And cheer the gathering mists of night.

Again the yellow fire impart ;
Lo ! planets shed a mimic day ;
Lo ! vivid meteors round me dart ;
On western clouds red light'nings play !

But I disdain these garish fires,
Sporting on evening's sultry wing ;
Thy humbler light my eye admires,
Thy soft retiring charms I sing.

Thine is an unobtrusive blaze,
Content in lowly shades to shine ;
And much I wish, while thus I gaze,
To make thy modest merit mine.

For, long by youth's wild wishes cast
On the false world's tempestuous sea,
I seek retirement's shore at last,
And find a monitor in thee.

DR. DARWIN also, in his admired poem, the *Botanic Garden*, commemorates the splendour of the Glow-worm among other phenomena, supposed to be produced under the superintendence of the nymphs of fire.

“ You with light gas the lamps nocturnal feed
That dance and glimmer on the marshy mead ;
Shine round *Calendula* at twilight hours,
And tip with silver all her saffron flowers ;
Warm on her mossy couch the radiant worm,
Guard from cold dews her love-illumined form,
From leaf to leaf conduct the virgin light,
Star of the earth, and diamond of the night !”

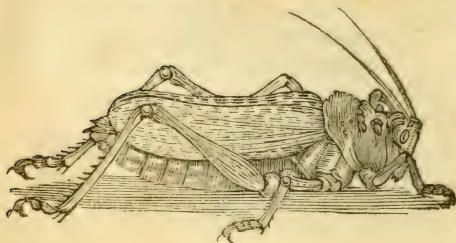
MR. MONTGOMERY also, thus prettily describes this sparkling insect :—

When evening closes Nature's eye,
The Glow-worm lights her little spark,
To captivate her favorite fly,
And tempt the rover through the dark.

Conducted by a sweeter star
Than all that deck the fields above,
He fondly hastens from afar,
To sooth her solitude with love.

GRYLLUS MIGRATORIUS.

MIGRATORY LOCUST.



THIS Locust is to be placed among the most noxious of all insects, or those capable of producing the most dreadful and extensive destruction. Legions of these animals are from time to time observed in various parts of the world, where the havoc they commit is almost incredible: whole provinces are in a manner desolated by them in the space of a few days, and the air is darkened by their numbers: nay, even when dead they are still terrible; since the putrefaction arising from their inconceivable number is such, that it has been regarded as one of the probable causes of pestilence in the eastern regions.

This formidable Locust is generally of a brownish colour, varied with pale red, or flesh-colour, and the legs are frequently blueish. In the year 1748 it appeared in irregular flights, in several parts of Europe, as in Germany, France, and England: and in this capital itself, and its neighbourhood, great numbers were seen: they perished, however, in a short time, and were happily not productive of any material mischief, having been probably driven by some irregular wind out of their intended course, and weakened by the coolness of the climate.

From a paper published in the 18th volume of the Philosophical Transactions, we find that in the year 1693, swarms of this species of Locust settled in some parts of Wales. Two vast flights were observed in the air not far from the town of Dolgalken in Merionethshire: the others fell in Pembrokeshire. From a letter published in the 38th volume of the same work, it appears that some parts of Germany, particularly in the Marsh of Brandenburgh, &c. suffered considerable injury from the depredations of these animals. They made their

appearance in the spring of the year 1732, from flights which had deposited their eggs in the ground the preceding year. They attacked and devoured the young spike of the wheat, &c. and this chiefly by night, and thus laid waste many acres at a time, beyond all hope of recovery. In the 46th volume of the same Transactions, we find a description of the ravages of these animals in Walachia, Moldavia, Transylvania, Hungary, and Poland, in the years 1747 and 1748.

The first swarms entered Transylvania in August, 1747: these were succeeded by others, which were so surprisingly numerous, that when they reached the Red Tower, they were full four hours in their passage over that place; and they flew so close that they made a sort of noise in the air by the beating of their wings against one another. The width of the swarm was some hundreds of fathoms, and its height or density may be easily imagined to be more considerable, inasmuch as they hid the sun, and darkened the sky, even to that degree, when they flew low, that people could not know one

another at the distance of twenty paces ; but, whereas they were to fly over a river that runs into the vallies of the Red Tower, and could find neither resting place nor food ; being at length tired with their flight, one part of them lighted on the unripe corn on this side of the Red Tower, such as millet, Turkish wheat, &c. Another pitched on a low wood, where, having miserably wasted the produce of the land, they continued their journey, as if a signal had actually been given for a march. The guards of the Red Tower attempted to stop their irruption into Transylvania by firing at them ;* and indeed, where the balls and shot swept through the swarm, they gave way and divided ; but having filled up their ranks in a moment, they proceeded on their journey. In the month of September, some troops of them were thrown to the ground by great rains, and other inclemency of the weather, and,

* In the eastern parts of the world it is often found necessary for the governors of particular provinces to command a certain number of the military to take the field against armies of Locusts, with a train of artillery.

thoroughly soaked with wet, they crept along in quest of holes in the earth, dung, and straw; where, being sheltered from the rains, they laid a vast number of eggs, which stuck together by a viscid juice, and were longer and smaller than what is commonly called an ant's egg, very like grains of oats. The females having laid their eggs, died, like the silkworm: and we Transylvanians found, by experience, that the swarms which entered our fields by the Red Tower, did not seem to intend remaining there, but were thrown to the ground by the force of the wind, and there laid their eggs; a vast number of which being turned up and crushed by the plough, in the beginning of the ensuing spring, yielded a yellowish juice. In the spring of 1748, certain little blackish worms were seen lying in the fields, and among the bushes, sticking together, and collected in clusters, not unlike the hillocks of moles or ants. As nobody knew what they were, so there was little or no notice taken of them, and in May they were covered by the shooting of the corn sown in winter; but the subsequent June discovered what those worms

were; for then, as the corn sown in spring was pretty high, these creatures began to spread over the fields, and become destructive to the vegetables by their numbers. Then, at length, the country people, who had slighted the warning given them, began to repent of their negligence; for as these insects were now dispersed all over the fields, they could not be extirpated without injuring the corn. At that time they differed little or nothing from our common grasshopper, having their head, sides, and back, of a dark colour, with a yellow belly, and the rest of a reddish hue. About the middle of June, according as they were hatched, sooner or later, they were generally a finger's length, or somewhat longer, but their shape and colour still continued. Towards the end of June, they cast off their outward covering, and then it plainly appeared they had wings, very like the wings of bees, but as yet unripe, and unexpanded; and then their body was very tender, and of a yellowish green; then, in order to render themselves fit for flying, they gradually unfolded their wings with their hinder feet, as flies

do; and as soon as any of them found themselves able to use their wings, they soared up, and by flying round the others, enticed them to join them; and thus their numbers increased daily: they took circular flights of twenty or thirty yards square, until they were joined by the rest; and after miserably laying waste their native fields, they proceeded elsewhere in large troops. Wheresoever those troops happened to pitch, they spared no sort of vegetable; they eat up the young corn and the very grass; but nothing was more dismal than to behold the lands in which they were hatched; for they so greedily devoured every thing green thereon, before they could fly, that they left the ground quite bare.

There is nothing to be feared in those places to which this plague did not reach before the autumn; for the Locusts have not strength to fly to any considerable distance but in the months of July, August, and the beginning of September, and even then, in changing their places of residence, they seem to bend to warm climates.

Different methods are to be employed,

according to the age and state of these insects ; for some will be effectual as soon as they are hatched ; others when they begin to crawl ; and others in fine when they begin to fly ; and experience has taught us here in Transylvania, that it would have been of great service to have diligently sought out the places where the females lodged ; for nothing was more easy than carefully to visit those places in March and April, and to destroy their eggs, or little worms, with sticks or briars ; or if they were not to be beat out of the bushes, dung-hills, or heaps of straw, to set fire to them ; and this method would have been very easy, convenient, and successful, as it has been in other places ; but in the summer, when they have marched out of their spring quarters, and have invaded the corn-fields, &c. it is almost impossible to extirpate them without thoroughly threshing the whole piece of land that harbours them with sticks or flails ; and thus crushing the Locust with the produce of the land. Finally, when the corn is ripe or nearly so, we have found, to our great loss, that there is no other method of getting rid

of them, or even of diminishing their numbers, but to surround the piece of ground with a multitude of people, who might fright them away with bells, brass vessels, and all other sorts of noise. But even this method will not succeed, till the sun is pretty high, so as to dry the corn from the dew ; for otherwise they will either stick to the stalks, or lie hid under the grass ; but when they happen to be driven to a waste piece of ground, they are to be beat with sticks or briars ; and if they gather together in heaps, straw or litter may be thrown over them, and set on fire. Now this method seems rather to lessen their numbers than totally to destroy them ; for many of them lurk under the grass, or thick corn, and in the fissures of the ground from the sun's heat ; wherefore it is requisite to repeat this operation several times, in order to diminish their numbers, and consequently the damage done by them. It will likewise be of use, where a large troop of them has pitched, to dig a long trench, of an ell width and depth, and place several persons along its edges, provided with brooms and such like things,

while another numerous set of people form a semicircle that takes in both ends of the trench, and encompasses the locusts; and, by making the noise above-mentioned, drive them into the trench, out of which, if they attempt to escape, those on the edges are to sweep them back; and then crush them, with their brooms and stakes, and bury them by throwing in the earth again. But when they have begun to fly, there should be horsemen upon the watch in the fields; who, upon any appearance of the swarm taking wing, should immediately alarm the neighbourhood, by a certain signal, that they might come and fright them from their lands by all sorts of noise; and if tired with flying, they happen to pitch upon a waste piece of land, it will be very easy to kill them with sticks and brooms in the evening, or early in the morning, while they are wet with the dew; or any time of the day in rainy weather, for then they are not able to fly, I have already taken notice that, if the weather be cold or wet in Autumn, they generally hide themselves in secret places, where they lay their eggs, and then die:

therefore great care should be taken at this time, when the ground is freed of its crop, to destroy them before they lay their eggs. In this month of September, 1748, we received certain intelligence that several swarms of Locusts, came out of Walachia into Transylvania through the usual inlets, and took possession of a tract of land in the neighbourhood of Clausberry, near three miles in length, where it was not possible to save the millet and Turkish wheat from these devourers. I am of opinion, that no instance of this kind will occur in our history, except what some old men remember, and what we have experienced; at least there is no account that any Locusts came hither which did not die before they laid their eggs: however, this is a known fact; that about forty years ago, some swarms came hither out of Walachia, and did vast damage wherever they settled, but either left this country before the end of summer, or died by the inclemency of the weather.

As an appendix to the foregoing account, it is added by a correspondent from Vienna, that a considerable number of Locusts had

also come within twenty leagues of that city, and that one column of them had been seen there, which was about half an hour's journey in breadth; but of such a length, that after three hours, though they seemed to fly fast, one could not see the end of the column.

We have before observed, that the Locusts which fell in several parts of England, and in particular in the neighbourhood of the metropolis in the year 1748, were evidently some straggling detachments from the vast flights which in that year visited many of the inland parts of the European continent.

The ravages of Locusts in various parts of the world, at different periods, are recorded by numerous authors, and a summary account of their principal devastations may be found in the works of Aldrovandus. Of these a few shall be selected as examples. Thus, in the year 593 of the Christian era, after a great drought, these animals appeared in such vast legions, as to cause a famine in many countries. In 677, Syria and Mesopotamia were over-run by them. In 852,

immense swarms took their flight from the eastern regions into the west, flying with such a sound that they might have been mistaken for birds ; they destroyed all vegetables, not sparing even the bark of trees and the thatch of houses ; and devouring the corn so rapidly as to destroy, on computation, an hundred and forty acres in a day : their daily marches, or distances of flight, were computed at twenty miles ; and these were regulated by leaders or kings, who flew first, and settled on the spot which was to be visited at the same hour the next day by the whole legion : these marches were always undertaken at sun-rise. The Locusts were at length driven by the force of the wind into the Belgic ocean, and being thrown back by the tide and left on the shores, caused a dreadful pestilence by their smell. In 1271, all the corn-fields of Milan were destroyed ; and in the year 1339, all those of Lombardy. In 1541, incredible hosts afflicted Poland, Walachia, and all the adjoining territories, darkening the sun with their numbers, and ravaging all the fruits of the earth.—DR. GREGORY, &c.

HELIX.—THE SNAIL.

THE eyes of the *Hortensis*, or Garden Snail, are lodged in their horns, one at the end of each horn, which they can retract at pleasure. The manner of examining these eyes, which are four in number (though a cruel experiment), is this: when the horns are out, cut off nimbly the extremity of one them; and placing it before the microscope, you may discover the black spot at the end to be really a semi-globular eye. The dissection of this animal is very curious; for by this means the microscope not only discovers the heart beating just against the round hole near the neck, which seems the place of respiration, but also the liver, spleen, stomach, and intestines, with the veins, arteries, mouth, and teeth, are plainly observable. The intestines of this creature are green, from its eating herbs, and are branched all over with fine capillary white veins; the mouth is like a hare's or rabbit's, with four or six needle teeth, resembling

those of leeches, and of a substance like horn.

COWPER gives the following pretty description of this animal :—

The SNAIL.

WITHIN his house secure he hides,
When danger imminent betides
Of storm, or other harm besides
Of weather.

Give but his horns the slightest touch,
His self-collecting power is such,
He shrinks into his house with much
Displeasure.

Where'er he dwells, he dwells alone,
Except himself has chattels none,
Well satisfied to be his own,
Whole treasure.

Thus, hermit-like, his life he leads,
Nor partner of his banquet needs,
And, if he meets one, only feeds,
The faster.

HIRUDO.—THE LEECH.

THE Medicinal Leech, which is well known, grows to the length of two or three inches. The body is of a blackish brown colour, marked on the back with six yellow spots, and edged with a yellow line on each side : but both the spots and the lines grow faint, and almost disappear, at some seasons. The head is smaller than the tail, which fixes itself very firmly to any thing the creature pleases.—The geometrical Leech grows to an inch and a half in length : and has a smooth and glossy skin of a dusky brown colour, but in some seasons greenish, spotted with white. When in motion its back is elevated into a kind of ridge ; and it then appears as if measuring the space it passed over, like a compass, whence its name. Its tail is remarkably broad ; and it holds as firmly by it as by the head. It is common on stones in shallow running waters ; and is often found on trout and other fish after the spawning season.

The mouth of the Leech is armed with a sharp instrument that makes three wounds at once, and may be compared to the body of a pump; and the tongue or fleshy nipple to the sucker: by the working of this piece of mechanism, the blood is made to rise up to the conduit, which conveys it to the animal's stomach, which is a membranaceous skin, divided into twenty-four cells. The blood which is sucked out is there preserved for several months, almost without coagulating, and proves a store of provision to the animal. The Leech will indicate the change of weather if confined in glass, agreeable to the following experiment:—

Put a Leech into a large phial three parts full of clear rain water, regularly change the same thrice a week, and let it stand on a window frame fronting the north. In fair and frosty weather it will be motionless, and rolled up in a spiral form, at the bottom of the glass; but prior to rain or snow, it will creep to the top, where, if the rain will be heavy, and of some continuance, it will remain a considerable time; if trifling it will descend. Should the rain or

snow be accompanied with wind, it will dart about its habitation with an amazing celerity, and seldom ceases until it begins to blow hard. If a storm of thunder or lightning be approaching, it will be exceedingly agitated, and express its feelings in violent convulsive starts at the top of the glass. It is remarkable, that however fine and serene the weather may be, and not the least indication of a change, either from the sky, the barometer, or any other cause whatever, yet if the animal ever shifts its position, or moves in a desultory manner, the coincident results will certainly occur within thirty-six hours; frequently within twenty-four, and sometimes in twelve; though its motions chiefly depend on the fall and duration of the wet, and the strength of the wind.

A very curious barometer may be very easily contrived, by having a glass vessel blown for the purpose, consisting of different recesses properly graduated, with an index of the changes of weather affixed against each partition or story; observing carefully to change the water thrice, or oftener, in a week, and covering the mouth of the vessel

with a piece of muslin, gauze, or pricked paper, to keep the animals safe, and admit them air for respiration.

THE LIBELLULA.—DRAGON FLY.

THESE insects, sometimes called by the very improper title of horse-stingers, exhibit an instance scarcely less striking than the butterfly, of that strange dissimilitude in point of form, under which one and the same animal is destined to appear in the different periods of its existence. Perhaps few persons not particularly conversant in the history of insects, would imagine that these highly brilliant and lively animals, which may be seen flying with such strength and rapidity round the meadows, and pursuing the smaller insects with the velocity of a hawk, had once been inhabitants of the water, and that they had resided for a very long space of time in that element before they assumed their flying form. This insect makes its appearance principally towards the decline of sum-

mer, and is an animal of singular beauty ; its general length is about three inches from head to tail, and the wings, when expanded, measure near four inches from tip to tip : the head is very large, and affixed to the thorax by an extremely slender neck ; the eyes occupy by far the greatest part of the head, and are of a pearly blue grey cast, with a varying lustre : the front is greenish yellow, the thorax of the same colour, but marked by longitudinal black streaks ; the body which is very long, slender, and sub-cylindrical ; is black, with rich variegations of bright blue, and deep grass-green ; the wings are perfectly transparent, strengthened by very numerous black reticular fibres, and exhibit a strong iridescent appearance, according to the various inflexions of light ; each is marked near the tip by a small oblong square black spot on the outer edge ; the legs are black, and the tail is terminated by a pair of black forcipated processes, with an intermediate shorter one of similar colour. Sometimes this insect varies ; the spots or marks on the abdomen and thorax being red, or red-brown instead of green. The life of

this insect is short, in comparison with that which it passed in its aquatic state, the frosts of the close of Autumn destroying the whole race. They are also the prey of several sorts of birds.

MELOE PROSCARABÆS.—THE OIL BEETLE.

THIS insect is of considerable size, often measuring near an inch and a half in length; its colour is violet black, especially on the antennæ and limbs; the wing sheaths are very short, in the female insect especially, scarcely covering more than a third of the body, and are of an oval shape. This insect is frequent in the advanced state of spring in fields and pastures, creeping slowly, the body appearing so swoln, or distended with eggs, as to cause the insect to move with difficulty. On being handled it suddenly exudes from the joints of its legs, as well as from some parts of the body, several small drops of a clear, deep yellow oil or fluid, of a very peculiar, and penetrating smell. This oil or

fluid, has been highly celebrated for its supposed efficacy in rheumatic pains, &c. when used as an embrocation on the parts affected ; for this purpose also the oil expressed from the whole insect has been used with equal success.

MELOE VESICATORIUS.—SPANISH BLISTER
FLY.

THE Spanish Fly, is an insect of very great beauty, being entirely of the richest gilded grass-green, with black antennæ. Its shape is lengthened, and the abdomen, which is pointed, extends somewhat beyond the wing-sheaths : its usual length is about an inch. This celebrated insect, the *Cantharis* of the Materia Medica, forms, as is well known, the safest, and most efficacious epispastic or blister plaister, raising after the space of a few hours, the cuticle, and causing a plentiful serous discharge from the skin.

OESTRUS.—GAD FLY.

THE Ox Gad-fly, is about the size of a common bee, and is of a pale yellowish brown colour, with the thorax marked by four longitudinal dusky streaks, and the abdomen, by a black bar across the middle, the tip being covered with tawny, or orange coloured hairs: the wings are pale brown and unspotted.

The female of this insect, when ready to deposit her eggs, fastens on the back of a heifer or cow, and piercing the skin with the tube situated at the top of the abdomen, deposits an egg in the puncture; she then proceeds to another spot at some distance from the former, repeating the same operation at intervals on many parts of the animal's back. This operation is not performed without severe pain to the animal on which it is practised; and it is for this reason that cattle are observed to be seized with such violent horror when apprehensive of the ap-

proaches of the female Oestrus; flying with uncontrollable rapidity, and endeavouring to escape their tormentor, by taking refuge in the nearest pond; it being observed that this insect rarely attacks cattle when standing in the water.

ONISCUS ARMADILLO.—MEDICAL WOOD
LOUSE.

THIS popular insect, well known by the name of Wood-louse, is a very common insect in gardens and fields, and is observed in great quantities under the barks of decayed trees, and beneath stones in damp situations, &c. When suddenly disturbed or handled, it rolls itself up into a completely globular form, in the manner of the curious quadrupeds called Armadillos, frequently remaining in this state for a very considerable length of time, or so long as it is any ways disturbed. Swammerdam relates a ludicrous mistake of a servant maid, who, finding in

the garden a great many in this globular state, imagined she had discovered some handsome materials for a necklace, and betook herself to stringing them with great care: but on suddenly perceiving them unfold, was seized with a panic, and ran shrieking into the house.

Though considered at present as but of slight importance in the practice of physic, these animals once maintained a very respectable station in the *Materia Medica*, under the title of Millepedes.

PAPPILIO.—BUTTERFLY.

THIS curious and beautiful insect is distinguished by its antennæ growing thicker towards the tip, and generally ending in a knob; wings, when sitting, erect, the edges meeting together over the abdomen, it flies in the day time. There are very nearly twelve hundred species scattered over the globe, of which nearly seventy are natives of our own country.

Butterflies of every description are ex-

tremely prolific; a single female, at one birth, produces several hundred eggs: and one of the most wonderful particulars in the history of these insects, is the precaution with which they provide for the security of their young: some species tear off even the down from their own bodies to supply them with a covering.

The variety and richness of the colours that adorn the greater part of this tribe, have made it an object of especial research by painters as well as by naturalists. In general the tropical climates, that heighten the colours both in the plumage of birds and the scales of fishes, offer the most gaudy specimens of the Butterfly. Our limits will only allow us to detail two or three descriptions in prose and verse of this beautiful insect.

The *Priamus* measures more than six inches from wing's end to wing's end: the upper wings are velvet black, with a broad band of the most beautiful grass-green, and of a satiny lustre, drawn from the shoulder to the tip; and another on the lower part of the wing, following the shape of that part, and of a somewhat undulating appearance as

it approaches the tip : the lower wings are of the same green colour, edged with velvet black, and marked by four spots of that colour ; while at the upper part of each, or at the part where the upper wings lap over, is a squarish orange coloured spot ; the thorax is black, with sprinklings of lucid green in the middle, and the abdomen is of a bright yellow, or gold colour. On the under side of the animal the distribution of colours is somewhat different, the green being disposed in central patches on the upper wings, and the lower being marked by more numerous black as well as orange spots. The red, or bloody spots on each side the thorax, are not always to be seen on this, the Trojan monarch. This is a very rare insect, and is a native of the island of Amboyna.

The *Menelaus*, may be considered as one of the most splendidly beautiful of the Butterfly tribe. Its size is large, measuring, when expanded, about six inches ; and its colour is the most brilliant silver blue, that imagination can conceive ; changing, according to the variation of the light, into a deeper blue, and in some lights to a greenish cast :

on the under side it is entirely brown, with numerous deeper and lighter undulations, and three large ocellated spots on each wing. This fly is a native of South America.

The Apollo is also a beautiful insect, somewhat larger than our great Cabbage Butterfly: it inhabits Europe, and has been occasionally found in our own gardens. It is furnished with tentacles, silky, black, with two red dots on the segment on each side.

The Peacock Butterfly is likewise an elegant insect, with angular indented wings, spotted with black, and a large blue eye in each. It is dotted behind with green and gold spots, and is a native of England.

We shall now present our readers with a few descriptions in verse of this beautiful Insect, by several of our British poets.

The Birth of the BUTTERFLY.

When, bursting forth to life and light,
The offspring of enraptured *May*,
The Butterfly, on pinions bright,
Launched in full splendour on the day.

Unconscious of a mother's care,
 No infant wretchedness it knew ;
But, as she felt the vernal air,
 At once to full perfection grew.

Her slender form, ethereal, light,
 Her velvet textur'd wings unfold,
With all the rainbow's colours bright,
 And dropt with spots of burnish'd gold.

Trembling awhile, with joy she stood,
 And felt the sun's enliv'ning ray,
Drank from the skies the vital flood,
 And wonder'd at her plumage gay.

And balanc'd oft her broidered wings,
 Thro' fields of air prepar'd to sail ;
Then on her vent'rous journey springs,
 And floats along the rising gale.

Go child of pleasure, range the fields—
 Taste all the joys that Spring can give—
Partake what bounteous Summer yields,
 And live, while yet 'tis thine to live.

Go sip the rose's fragrant dew—
 The lily's honey'd cup explore—
From flower to flower the search renew,
 And rifle all the woodbine's store.

And let me trace thy vagrant flight,
 Thy moments, too, of short repose :
And mark thee, when, with fresh delight,
 Thy golden pinions ope and close.

But hark ! while I thus musing stand,
Pours on the gale an airy note,
And breathing from a viewless band,
Soft silvery tones around me float.

They cease—but still a voice I hear,
A whispered voice of hope and joy—
“ Thy hour of rest approaches near,
Prepare thee, mortal ! thou must die !

“ Yet, start not ! on thy closing eyes
Another day shall still unfold ;
A sun of milder radiance rise
A happier age of joys unfold.

“ Shall the poor worm that shocks thy sight,
The humblest form in nature’s train,
Thus rise in new born lustre bright,
And yet the emblem teach in vain ?

“ Ah ! where were once her golden eyes,
Her glitt’ring wings of purple pride ?
Conceal’d beneath a rude disguise !
A shapeless mass to earth allied.

“ Like thee, the hapless reptile lived,
Like thee she toiled, like thee she spun ;
Like thine, her closing hour arrived,
Her labours ceased, her web was done.

“ And shalt thou, numbered with the dead,
No happier state of being know ?
And shall no future sorrow shed,
On thee a beam of brighter glow ?

“ Is this the bound of power divine,
To animate an insect frame?
Or shall not He who moulded thine
Wake at His will the vital flame?

Go, mortal ! in thy reptile state,
Enough to know to thee is given ;
Go, and the joyful truth relate,
Frail child of earth, bright heir of heaven.”

ANONYMOUS.

Description of the Travels of a BUTTERFLY.

BY SPENSER.

The woods, the rivers, and the meadows green,
With his air-cutting wings he measur'd wide;
Nor did he leave the mountains bare unseen,
Nor the rank grassy fens delights untry'd.
But none of these, however sweet they been,
Mote please his fancy, nor him cause abide.
This choiceful sense with every change doth flit;
No common things may please a wavering wit.

To the gay gardens his unstay'd desire
Him wholly carried, to refresh his sprites,
There lavish Nature, in her best attire,
Pours forth sweet odours and alluring sights;
And Art, with her contending, doth aspire,
T' excel the natural with made delights :
And all that fair or pleasant may be found,
In riotous excess doth there abound.

There he arriving, round about doth fly
From bed to bed, from one to other border,
And takes survey, with curious busyeye,
Of every flower and herb there set in order ;
Now this, now that, he tasteth tenderly,
Yet none of them he rudely doth disorder,
Ne with his feet their silken leaves deface,
But pastures on the pleasures of each place.

And evermore, with most variety
And change of sweetness (for all change is
sweet),
He casts his glutton sense to satisfy ;
Now, sucking of the sap of herb most meet,
Or of the dew which yet on them does lie,
Now in the same bathing his tender feet ;
And then he percheth on some bank thereby,
To weather him, and his moist wings to dry.
SPENSER.

The beauty of the Butterfly, the splendour and astonishing variety of its colours, its elegant form, its sprightly air, with its roving and fluttering life, all unite to captivate the least observant eye. These insects indeed seem to vie with each other in beauty of tints and elegance of shape. The Butterflies of China, and particularly those of

America, and on the river of the Amazons, are remarkable for their size, and for the richness and vivid lustre of their colours. Nor is it too bold an assertion, perhaps, that the Butterflies of those hot climates afford instances of the most perfect art of colouring that nature has produced. But no description can be adequate to that, of which the sight alone can form a competent idea. Hence, in the Oriental countries, where the Butterfly is so much larger and more beautiful than ours, it is no wonder that it forms a principal ornament of their poetry.

Nature, in these insects, seems to have been fond to sport in the artificial mixture and display of her most radiant treasures. In some, what elaborate harmony of colouring, what brilliancy of tints, what soft and gradual transitions from one to another ! In the wings of others we may observe the lustre and variety of all the colours of gold and silver, and azure, and mother of pearl ; the eyes that sparkle on the peacock's tail, the edges bordered with shining silks, and furbelows, and the magnificence of the richest fringe.

Behold ! ye pilgrims of this earth, behold !
See all but man with unearn'd pleasure gay :
See her bright robes the *Butterfly* unfold,
Broke from her wintry tomb in prime of May !
What youthful bride can equal her array ?
Who can with her for easy pleasure vie ?
From mead to mead with gentle wing to stray,
From flower to flower on balmy gales to fly,
Is all she has to do beneath the radiant sky.

THOMSON.

With what vigour do they sport in the
solar ray, exult in existence, inhale the odoriferous breeze, and rove in fickle flight from
flower to flower:—

Their wings (all-glorious to behold)
Bedropt with azure, jet, and gold,
Wide they display : the spangled dew
Reflects their eyes and various hue.

GAY.

SAWYER FLY.

THE Sawyer Fly, is so called from its
faculty of sawing asunder the branches of
trees, whose substance is its food, is about

three inches in length when full grown, and is a very singular insect. Its head has somewhat the appearance of an elephant, having a horny bill like the proboscis of that animal, bending upwards from the under part, with another pointing downwards from the upper part of the head, both of a jet black, and of a fine polish. On the inner surface of the upper bill are raised points, like the teeth of a saw, which are used by the insect in the same manner. Its body is like that of a beetle, but considerably larger, with double wings, the inner of which is like coarse gauze; and its legs are armed at each joint with crooked, sharp nails, with the same on each toe, like a bird.

The process of this insect in sawing down branches of trees, is really admirable, but it is hardly possible to form an idea of the manner of doing it without a description. This work it performs by encircling the branch with its bills, the points of which it fastens well into the wood, and turning round it briskly by the strength of its wings, which make a loud buzzing noise, it in a short time saws the branch asunder. They

are by many called Elephant Flies, from the great resemblance of their heads to that animal; they are perfectly harmless, and are caught only to be kept as curiosities.

Atwood's History of Dominica.

SCARABÆUS HERCULES.—THE HERCULES,
OR DRUNKEN BEETLE.

THIS remarkable insect measures five or six inches in length, the wing shells are of a smooth surface, of a blueish or brownish grey colour, sometimes nearly black, and commonly marked with several small, round, deep, black spots, of different sizes: the head and limbs are coal black: from the upper part of the breast or thorax proceeds a horn or proboscis of enormous length, in proportion to the body; it is sharp at the tip, where it curves slightly downwards, and is marked beneath by two or three denticulations, and furnished, throughout its whole length, with a fine, short, velvet-like pile, of a brownish orange colour: from the front of the head proceeds also a strong horn,

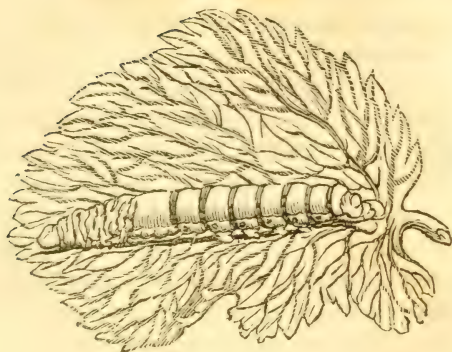
about two-thirds the length of the former, toothed on its upper face, but not furnished with any of the velvet-like pile, which appears on the former. This insect is a native of several parts of South America, where great numbers are said to be sometimes seen on the tree called *Mammæa*, rasping off the rind of the slender branches by working nimbly round them, with the horns, till they cause the juice to flow, which they drink to intoxication, and thus fall senseless from the tree.—DR. GREGORY.

SCOLOPENDRA.—CENTIPEDE.

THE larger species of these insects are found only in the hotter regions of the globe. They are of a formidable appearance, and possess the power of inflicting severe pain and inflammation by their bite. One of the most conspicuous of these animals is the *Scolopendra Morsitans*, a native of many parts of Asia, Africa, and South America. Its length is sometimes not far short of ten

inches: its colour is yellowish brown, the legs and under parts of the body being much paler, the head is armed on each side with a very large carved fang, of the same strong or horny nature as those of the *arana avicularia*, but placed in a different direction, the two fangs meeting horizontally when in action: these fangs are furnished on the inside, near the tip, with an oblong slit, through which, during the act of wounding, an acrimonious or poisonous fluid is discharged; the eyes are several in number, on each side of the head, and are placed in a small oval groupe; the legs are twenty on each side of the body, and the tail is terminated by a pair of processes, which perfectly resemble the rest of the legs, except that they are larger, and have the first joints strongly spined, or muricated on the inside. These horrible insects are said to be chiefly found in woods, but, like the small European species, they are occasionally seen in houses, and are said to be so common in some particular districts, that the inhabitants are obliged to place the feet of their beds in vessels of water, in order to prevent their attacks during the night.

SILK-WORM.



THE Silk-Worm is a native of China, and feeds on the leaves of the white mulberry. That industrious nation was acquainted with the manufacture of silk, from the most remote ages; but it was scarcely known in Europe before the time of Augustus. Its beauty attracted the attention of the luxurious Romans; and after the effeminate reign of Elogabalus, it became a

common article of dress. It was brought from China at an enormous expence, manufactured again by the Phœnicians, and sold at Rome for its weight of gold. In the reign of Justinian this commerce was interrupted by the conquests of the Scythian tribes, and all attempts to procure it failed, till two Persian monks had the address to convey some of the eggs of the insect from China to Constantinople, concealed in the hollow of a cane. They were hatched, and the breed carefully propagated. This happened in 555 ; and some years after we find that the Greeks understood the art of procuring and manufacturing of silk as well as the Orientals. Roger, king of Sicily, brought the manufacture to that island in 1130, forcibly carrying off the weavers from Greece, and settling them in Sicily. From that island the art passed into Italy, and thence into France ; and the revocation of the edict of Nantz established the manufactory of silk in Britain.

Silk, as spun by the animal, is in the state of fine threads, varying in colour from white to reddish yellow. It is very elastic,

and has considerable strength, if we consider its small diameter.

All the Caterpillars of the *Phalænæ*, or Silk-Worm, after having several times cast their skin, spin for themselves the materials of a habitation, in which they are to be transformed into chrysalids. Of all the inventions of insects to protect themselves during this state of imbecility, that practised by the Silk-Worm is most universally known; and if animals acquire a consequence of reputation from their connection with men, and the conveniences with which they accommodate him, this insect may challenge, perhaps, a larger share of it than any other animal whatever. Our luxury has brought silk into such general request, that it may now be deemed a necessary of life: the poor, in some countries at least, would find it almost impossible to procure the necessary articles of clothing, were woollen stuffs worn by all those who at present are supplied with silk.

Dr. Durham informs us, that a lady of his acquaintance, who took much pleasure in keeping Silk-Worms, had once the curi-

osity to draw out one of the oval cases which the Silk-Worm spins, into all the silken wire it was made up of, which to the great wonder as well of her husband as herself, appeared to be by measure a great deal above three hundred yards, and yet weighed but two grains and a half.

SPHINX.

THIS is one of the largest and most beautiful of European insects. The upper wings are of a fine dark grey colour, with a few slight variegations of dull orange and white; the under wings are of a bright orange colour, marked by a hair of transverse black bands; the body is also orange-coloured, with the sides marked by black bars, while along the top of the back, from the thorax to the tail, runs a broad blue grey stripe: on the top of the thorax is a very large patch of a singular appearance, exactly representing the usual figure of a skull or Death's head, and of a pale grey, varied

with dull ochre colour, and black. When in the least disturbed or irritated, this insect emits a stridulous sound, something like the squeaking of a bat or mouse : and from this circumstance, as well as from the mark above-mentioned on the thorax, is held in much dread by the vulgar in several parts of Europe, its appearance being regarded as a kind of ill omen, or harbinger of approaching fate. We are informed by the celebrated Reaumur, that the members of a female convent in France were thrown into great consternation at the appearance of one of these insects, which happened to fly in during the evening at one of the windows of the dormitory. The caterpillar from which this Sphinx proceeds is in the highest degree beautiful, and far surpasses in size every other European insect of the kind ; measuring sometimes near five inches in length, and being of a very considerable thickness ; its colour is a bright yellow, the sides marked by a row of seven most elegant broad stripes or bands of a mixed violet and sky-blue colour. This caterpillar is principally found on the potatoe and the jessamine,

those plants being its favourite food. It usually changes into a chrysalis in the month of September, retiring for that purpose pretty deep under the surface of the earth, the complete insect emerging the following June or July. The Sphinx is generally considered as a very rare insect; and as the caterpillar feeds chiefly by night, concealing itself by day under leaves, &c. it is not often detected.—Dr. GREGORY.

SPIDER.—*ARANEA*.

THE gigantic *Aranea Avicularia*, or Bird-catching Spider, is too remarkable an insect to be passed over in silence. This enormous Spider is not uncommon in many parts of the East Indies and South America; where it resides among trees, frequently seizing on small birds, which it destroys by wounding with its fangs, and afterwards sucking their blood; the slit, or orifice, near the tip of the fangs in Spiders, through which the poisonous fluid is evacuated, and the existence of

which has sometimes afforded so much doubt among naturalists, is in this insect so visible, that it may be distinctly perceived without the assistance of a glass.

Ingenuity of the Spider.

T. A. KNIGHT, Esq. of Herefordshire, has in a Treatise on the culture of the Apple and Pear, introduced the following anecdote concerning this curious insect :

“ I have frequently placed a Spider on a small upright stick, whose base was surrounded by water, to observe its most singular mode of escape. After having discovered that the ordinary means of retreat are cut off, it ascends the point of the stick, and standing nearly on its head, ejects its web, which the wind readily carries to some contiguous object. Along this the sagacious insect effects his escape, not, however, till it has previously ascertained, by several exertions of its whole strength, that its web is properly attached to the opposite end. I do not know that this instance of the sagacity

has been noticed by any Entomological writer, and I insert it here, in consequence of having seen in some periodical publication, a very erroneous account of the Spider's threads, which are observed to pass from one tree or bush to another in dewy mornings."

Battle of a Spider and Toad

I OBSERVED, (says an ancient writer) a Spider descend down a wall, to a place where a Toad lay, and perceived the Spider touch the Toad, and retire; upon which the Toad immediately swelled very big, and leaped to a plantain leaf, and eating a bit of it, her swelling abated, and she returned to the place where she was before; and was again assaulted by the Spider, with the same effect and remedy, till upon the third time the Relater plucked up the plantain leaf, which the Toad wanting to counteract the poison, burst and died immediately, and the Spider then walked away.

On the Bite of the Spider.

A HEALTHY man, and of a very good constitution, of the town of Opping, (famous for its acidulous waters) being in his granary, felt something pricking him in the neck, and having laid his hand immediately on the place, saw it was a Spider, that he had bruised without knowing what it was. This biting was followed by a sensation of heat and pain in the part, but not thinking that it deserved to be paid any attention to, he went the next morning to the country, where he drunk plentifully with his friends. The third day after the bite signs of inflammation appeared in the neck; the fourth day the breast was inflamed, and he complained of lassitude and weakness, and a Barber applied to his breast the ungent of litharge. The fifth day, a physician having been sent for, prescribed sudorifics, cordials, and had *theriacæ* applied to the neck; but the sixth day the patient died.

Dr. Salomon Reiselius.

The irascibility of Spiders.

When two Spiders of the same size meet in combat, neither of them will yield : they hold each other by their fangs so fast, that one of the two must die before they are separated. Mr. Leuvenhock says, he saw one Spider, that was however only wounded in the leg by his antagonist. A drop of blood as large as a grain of sand issued from the sore, and not being able to use this wounded leg in running away from his enemy, he held it up, and presently afterwards the whole limb dropped from his body.—When Spiders are wounded in the breast or upper parts of the body, they always die.

BINGLEY.

Curious artifice of the Spider.

AN old Spider, who has no longer any thing to subsist on, seeks out a young one, and acquaints it with her necessities, and intentions ; at which the other, either out of respect to old age, or apprehensive of the

pincers of its antagonist, resigns its place to her, and spins itself a new web in another situation; but if the old Spider can find none of its species that will, either by consent or compulsion, resign its nest to her, she must then perish for want of subsistence.

The French Prisoner and Spider.

A BEAUTIFUL picture, called *Le Bal de Watteaux*, of which the following anecdote is the subject, was some years since held in the highest estimation on the Continent, by the most celebrated artists.

Pelisson was a writer, who having given offence to the French government, was thrown into a cell of the Bastile, where, as usual during the reign of Louis the Fourteenth, the prisoners were debarred the visits of their friends, and lived on bread and water, without the comfort of any book whatever, or the use of pen and ink.

After a few months of confinement life

was almost become insupportable to poor Pelisson, till at last he became acquainted with a Spider, which he had rendered familiar by frequently giving it crumbs of bread, and the insect used to spin down for the same, as soon as he saw the captive at his meals.

From that period Pelisson's sufferings were in some measure softened, as the care of the Spider was to him both an employ and an amusement: he considered that he was no longer alone, and found comfort in that thought.

It however happened one day, that the gaoler brought the bread and water later than usual, and he was still in the cell when the Spider spun down for his accustomed repast. Immediately Pelisson threw it a few crumbs, but the sight highly offended the gaoler, who loaded the prisoner with reproaches for so vile an amusement, as he called it, and with one of the large keys he was holding in his hand he unmercifully killed the poor insect, which for the first time, made Pelisson shed tears.

Wonderful properties in the Garden Spider.

WHEN the garden Spider, (*Araneæ horticola*) is desirous of flitting from one place to another, this animal fixes one end of a thread to the place where she stands, and then with her hind paws draws out several other threads from the nipples, which, being lengthened out, and driven by the wind to some neighbouring tree, or other object, are, by their natural clamminess, fixed to it. When she finds that these are fastened, she makes of them a bridge, on which she can pass or repass at pleasure. This done, she renders the thread still thicker, by spinning others to it. From this thread she often descends, by spinning downward to the ground. The thread formed by the latter operation she fixes to some stone, plant, or other substance. She reascends to the first thread, and at a little distance from the second, begins a third, which she fixes in the same manner. She now strengthens all the three threads, and beginning at one of the corners, weaves across, and at last forms a

strong and durable net, in the centre of which she places herself, with her head downwards to wait for her prey.

TIME'S TELESCOPE.

Her disembowelled web she spreads
Obvious to *vagrant flies*, she secret stands
Within her woven cell ; the humming prey,
Regardless of their fate, rush on the toils
Inextricable, nor will aught avail
Their arts, or arms, or shapes of lovely hue :
The wasp insidious, and the buzzing *drone*,
And *butterfly* proud of expanded wings
Distinct with gold, entangled in her snares,
Useless resistance make : with eager strides
She tow'ring flies to her expected spoils ;
Then with envenom'd jaws the vital blood
Drinks of reluctant foes, and to her cave
Their bulky carcasses triumphant drags.

PHILIPS.

To the Spider.

Ingenious insect, but of ruthless mould,
Whose savage craft, as nature taught, designs
A mazy web of death, the filmy lines,
That form thy circling labyrinth, unfold
Each thoughtless fly that wanders near thy hold,

Sad victim of thy guile ; nor aught avail
His silken wings, nor coat of glossy mail,
Nor varying hues of azure, jet, or gold :
Yet though thus ill the fluttering captive fares,
Whom, heedless of the fraud, thy toils trepan ;
Thy tyrant-fang, that slays the stranger, spares
The bloody brothers of thy cruel clan ;
While *man* against his fellows spreads his snares,
Then most delighted, when his prey is *man*.

RUSSELL.

Lines on the Spider, by MR. DRYDEN.

The treach'rous Spider when her nets are spread,
Deep ambush'd in her silent den does lie,
And feels, far off, the trembling of her thread,
Whose filmy cord should bind the struggling fly :
Then, if at last she finds him fast beset,
She issues forth and runs along her loom :
She joys to touch the captive in her net,
And drags the little wretch in triumph home.

On a Spider.

Artist, who underneath my table
Thy curious texture has display'd !
Who, if we may believe the fable,
Wert once a lovely blooming maid !

Insidious, restless, watchful spider,
Fear no officious damsel's broom,
Extend thy artful fabric wider,
And spread thy banners round my room.

Swept from the rich man's costly ceiling,
Thou'rt welcome to my homely roof,
Here may'st thou find a peaceful dwelling,
And undisturb'd attend thy woof.

While I thy wond'rous fabric stare at,
And think on hapless poet's fate ;
Like thee confin'd to lonely garret,
And rudely banish'd rooms of state.

And as from out thy tortur'd body
Thou draw'st thy slender string with pain,
So does he labour, like a noddy,
To spin materials from his brain :

He, for some fluttering tawdry creature,
That spreads her charms before his eye ;
And that's a conquest little better
Than thine, o'er captive butterfly.

Thus far 'tis plain we both agree,
Perhaps our deaths may better show it—
'Tis ten to one but penury
Ends both the Spider and the Poet.

SHENSTONE.

TARANTULA.—*ARANEA*.

THE Tarantula has the breast and belly of an ash colour ; the legs are likewise ash coloured, with blackish rings on the under part : two of its eyes are larger than the others, they are red and placed in the front ; four other eyes are placed in a transverse direction towards the mouth. It is a native of Italy, Cyprus, Barbary, and the East Indies. It lives in bare fields, where the lands are fallow, but not very hard. Its

dwelling is about four inches deep, and half an inch wide ; at the bottom it is curved, and there the insect sits in wet weather, and cuts its way out, if water gains upon it. It weaves a net at the mouth of the hole. These Spiders do not live quite a year. In July they shed their skin. They lay about seven hundred and thirty eggs, which are hatched in the spring : but the parent does not live to see her progeny, as she expires early in the winter. The ichneumon fly is their greatest enemy.

The bite of the Tarantula is said to occasion an inflammation in the part, which in a few hours brings on sickness, difficulty of breathing, and universal faintness ; the same symptoms return annually, in some cases, for several years ; and at last terminate in death. Music, it has been pretended, is the only cure. Such are the circumstances that have been generally related, and long credited, concerning the bite of this animal. But it is now generally agreed, that no such effects attend this bite : and that the exhibitions of dancing to music by persons pretending to be so affected, are only villainous deceptions

to excite the compassion and extract the money of the spectators.

VESPA.—WASP.

THE common Wasp, or *Vespa vulgaris*, is known to every one. The nest of this insect is a highly curious structure; and is prepared beneath the surface of some dry bank, or other convenient situation. Its shape is that of an upright oval, often measuring ten or twelve inches at least in diameter: it consist of several horizontal stages or stories of hexagonal cells, the interstices of each story being connected at intervals by upright pillars: and the exterior surface of the nest consists of a great many layers or pieces disposed over each other in such a manner as best to secure the interior cavity from the effects of cold and moisture; the whole nest, comprising both walls and cells, is composed of a substance very much resembling the coarse kinds of whitish brown paper, and consists of the fibres of various dry vege-

table substances agglutinated by a tenacious fluid discharged from the mouths of the insects during their operations. The female wasps deposit their eggs in the cells, one in each cell appropriated for that purpose : from these are hatched the larvæ or maggots, which bear a near resemblance to those of bees : they are fed by the labouring wasps with a coarse kind of honey, and when arrived at their full size, close up their respective cells with a fine tissue of silken filaments, and after a certain period emerge in their complete or perfect form. The male insect, like the bee, is destitute of a sting ; the society, or swarm, of the common wasp, consists of a vast number of neutral or labouring insects, a much smaller number of males, and still fewer females. They do not, like bees, prepare and lay up a store of honey for winter use ; but the few which survive the season of their birth, remain torpid during the colder months. Wasps in general are both carnivorous, and frugivorous.

A highly elegant Wasps nest is sometimes seen during the summer season attached or hanging by its base to some straw, or other

projecting substance from the upper part of buildings or out-houses. It does not much exceed the size of an egg, but is of a more globular form, and consists of several concentric bells, with considerable intervals between each, the interior alone being entire, and furnished with a small round orifice: the rest reaching only about two-thirds from the base of the nest. In the centre of the complete or intire bell, is situated the congeries of cells, built round a small central pillar attached to the base: the cells are not very numerous, and their orifices look downward.

Sagacity of the Wasp.

DR. DARWIN relates the following circumstance, which fell under his own eye, and shows the power of reasoning in a Wasp, as it is exercised among men:—

“A Wasp on a gravel walk had caught a fly, nearly as large as himself;—kneeling on the ground, I observed him,” says the doctor, “separate the tail and the head from the body part, to which the wings are at-

tached. He then took the body part in his paws, and rose about two feet from the ground with it; but a gentle breeze wafting the wings of the fly, turned him round in the air, and he settled again with it upon the gravel. I then distinctly observed him cut off, with his mouth, first one of the wings, and then the other, after which he flew away with it unmolested by the wind."

A Wasp carrying out a dead companion from the nest, if she finds it too heavy, cuts off the head, and carries out the load in two portions:

Mr. Ray, that great philosopher and admirer of the wonderful works of creation, relates the following interesting story of a Wasp:

"I observed," says he, "one of them dragging a green caterpillar thrice its own size: it laid this down near the mouth of a burrow that it had made in the ground, then removing a little ball of earth with which it had covered the orifice, it first went down itself, and, after staying a short time, returned, and seizing the caterpillar again, threw it down with him. Then leaving it there, it came

up, and taking some little globules of earth, rolled them one by one into the burrow, scraping the dust in by intervals, with its fore feet, in the manner of a dog, thus alternately rolling in pieces of earth, and scraping in dust, till the hole was full; sometimes going down (as it seemed to me) to press down the earth; and once or twice flying to a fir-tree, which grew near, perhaps to get turpentine to glue it down, and make it firm. The hole being filled, and equalled with the superficies of the earth, that its entrance might not be discovered, it took two fir-leaves that were near, and laid them by the mouth, most probably to mark the place."

Lines to a Wasp.—BRUCE.

Winged wanderer of the sky!
Inhabitant of heav'n high!
Dreadful with thy dragon tail,
Hydra head, and coat of mail!
Why dost thou my peace molest?
Why dost thou disturb my rest?
When in May the meads are seen,
Sweet enamel, white and green!

And the gardens, and the bow'rs,
And the forests, and the flow'rs,
Don their robes of curious dye,
Fine confusion to the eye !
Did I—chase thee in thy flight ?
Did I—put thee in a fright ?
Did I—spoil thy treasure hid ?
Never—never—never did.
Envious nothing, pray beware ;
Tempt mine anger, if you dare.
Trust not in thy strength of wing ;
Trust not in thy length of sting.
Heav'n nor earth shall thee defend ;
I thy buzzing soon will end.

VESPA CRABO.—HORNET.

THIS insect is of a far more formidable nature than the wasp, and is of considerably larger size: its colour is a tawny yellow, with ferruginous and black bars and variegations. The nest of this insect is generally built in the cavity of some decayed tree, or immediately beneath its roots; and not unfrequently in timber-yards and other similar situations. It is of a smaller size than that

of the wasp, and of a somewhat globular form, with an opening beneath; the exterior shell consisting of a few more layers of the same strong paper-like substance with that prepared by the wasp; the cells are also of a similar nature, but much fewer in number, and less elegantly composed. The Hornet, like the wasp, is extremely voracious, and preys on almost any kind of fresh animal substances which it can obtain, as well as honey, fruit, &c. &c. Its sting is greatly to be dreaded, and is often productive of very serious consequences.

Lines on seeing the sting of a Hornet, with the point of a needle, through a microscope:—

Thy microscopic glass, admiring bring,
And view the humble Hornet's sharpen'd sting;
Then on the slenderest needle turn the eye,
And the vast diff'rence in their points descry:
This view'd, more polish'd seems, acuter far;
That, rough as from the forge some blunted bar.

ZIMB—*T*_{SALTSALYA}.

OF this very formidable African fly, we give the following interesting description from Mr. Bruce:

“ This insect,” says Mr. Bruce, “ is a proof how fallacious it is to judge by appearances. If we consider its small size, its weakness, want of variety or beauty, nothing in the creation is more contemptible and insignificant. Yet passing from these to his history, and to the account of his powers, we must confess the very great injustice we do him, from want of consideration. We are obliged with the greatest surprise to acknowledge, that those huge animals, the elephant, the rhinoceros, the lion, and the tiger, inhabiting the same woods, are still vastly his inferiors ; and that the appearance of this small insect, nay, his very sound, though he is not seen, occasions more trepidation, movement, and disorder, both in the human and brute creation, than would whole herds of these monstrous animals collected

together, though their number was in a tenfold proportion greater than it really is.

“ This insect is called Zimb ; it has not been described by any naturalist. It is in size very little larger than a bee ; and his wings, which are broader than those of a bee, placed separate like those of a fly. As soon as this plague appears, and their buzzing is heard, all the cattle forsake their food, and run wildly about the plain till they die, worn out with fatigue, fright, and hunger. No remedy remains for the residents on such spots, but to leave the black earth, and hasten down to the sands of Atbara, and there they remain while the rains last, this cruel enemy never daring to pursue them farther.

“ What enables the shepherd to perform the long and toilsome journey across Africa is the camel, emphatically called the Ship of the Desert. Though his size is immense, as is his strength, and his body covered with a thick skin, defended with strong hair, yet still he is not capable to sustain the violent punctures this fly makes with his proboscis. He must lose no time in removing to the

sands of Atbara; for when once attacked by this fly, his body, head, and legs break out into large bosses, which swell, break, and putrify, to the certain destruction of the creature. Even the elephant and rhinoceros, who, by reason of their enormous bulk, and the vast quantity of food and water they daily need, cannot shift to desert and dry places as the season requires, are obliged to roll themselves in mud and mire, which, when, dry, coats them over like armour, and enables them to stand their ground against this winged assassin; yet have I found some of these tubercles upon almost every elephant and rhinoceros that I have seen, and attribute them to this cause."

There are twelve species of this insect.

THE END.

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